BRITISH MEDICAL JOURNAL

LONDON: SATURDAY, JULY 6th, 1935

THE CLINICAL ASPECT OF VERTIGO

BY

EDWARD D. D. DAVIS, F.R.C.S.

SURGEON, EAR, NOSE, AND THROAT DEPARTMENT, CHARING CROSS HOSPITAL

Cases of vertigo are often sent to the aurist to determine whether the ear is the cause. Aural vertigo has distinctive features, and furthermore is accompanied by tinnitus and deafness. Though patients find it difficult to describe their symptoms accurately, and though their description of giddiness differs, the large majority of patients with aural vertigo state that there are sudden attacks of a sensation of rotation, with a tendency to fall to the side of the deaf ear. If the vertigo is severe, or during the first few attacks, vomiting and even diarrhoea follow; but the vomiting and diarrhoea are only indications of the severity of the vertigo. Labyrinthine nystagmus is present during an attack, but it is usually absent during the quiescent intervals. Sometimes the nystagmus can be reproduced by rapid movement of the head, but the fistula phenomenon is rare and not often obtained. The fistula phenomenon means that the compression or suction of the air in the auditory meatus obtained by the application of Siegle's speculum or small rubber bag produces vertigo and nystagmus. This phenomenon indicates a fistula of the external semicircular canal or inner wall of the tympanum, and also that the labyrinth is active and not defunct.

Diagnostic Tests

The defective ear is generally hypersensitive to the cold-air or irrigation test. If tested by the Dundas-Grant cold-air insufflator, a fine rotary nystagmus is seen, and is most marked when the patient looks away from the tested ear. The pupil is slightly dilated, and the patient complains of vertigo. If the vertigo thus produced is similar to that which occurs during an attack it indicates that the ear is the probable cause. Frequently there is an active labyrinth even when the tested ear is very deaf and it is supposed that the lesion is limited to the cochlea and that the semicircular canals have escaped. The cold-air test is less severe and more easily applied than cold-water irrigation. The test should be discontinued immediately there is any sign of reaction, in order to avoid undue disturbance of the patient.

The diagnosis of aural vertigo is still further confirmed when a lesion of the ear, usually associated with vertigo, is present. Moreover, it has been noticed that one ear only is affected—that is, the lesion is unilateral. There appears to be a want of symmetry of the labyrinthine apparatus.

Pathological Changes in Aural Vertigo

It is important to decide what are the lesions or what are the pathological changes found in the ears in cases of aural vertigo. It is recognized that there is an irritation or increased excitability of the labyrinth. It has also been accepted for many years that Ménière's syndrome or triad of symptoms—vertigo, tinnitus, and deafness—is caused by some disturbance or affection of the internal ear. It has been handed down in numerous textbooks that the distinctly rare condition, true Ménière's disease, was an apoplexy or haemorrhage into the semicircular canals; but Dan McKenzie, in his researches into Ménière's own writings, could not find any evidence to support this theory of apoplexy. It is probable that such a lesion has occurred in leukaemia or in similar blood conditions, but it must be very rare.

If the auditory nerve was like the optic nerve and could be seen by such an instrument as the ophthalmoscope, we should perhaps have a better knowledge of the clinical pathology of the internal ear; but at present we can only make comparisons by analogy with diseases of the optic nerve. Hence there are still a number of cases of vertigo in which the character of the lesion of the ear is unknown.

Analysis of 100 Cases

There are certain clinical conditions and certain types of lesions which are associated with vertigo. I have studied the notes of one hundred cases of vertigo seen by me and in which thorough investigations have been made. Those cases in which the investigations were incomplete or in which the patients had not been followed up have not been included.

The following is the result of the aetiological inquiry from a clinical point of view:

Traumatism	3
Acute otitis media	4
Acute suppuration or exacerbation of a chronic suppuration	8
Chronic suppuration	15
Secondary sclerosis } Healed suppuration }	18
Eustachian obstruction	2
Otosclerosis	15
Cerebellar abscess	3
Tabes	2
Thrombosis of the posterior inferior cerebellar artery	1
Disseminated sclerosis	6
General intestinal and circulatory	4
Cause unknown (Ménière's disease)	19

Most of these patients were suffering from a direct vertigo due to a lesion of the vestibular apparatus because the ear was already under suspicion, and they were sent to me for that reason. The cases of indirect vertigo—that is, a disturbance of the vestibular apparatus following, for instance, gastro-intestinal trouble—were few. To take each heading individually:

The three *traumatic* cases were considered to be due to injury to the central nervous system, and at most were cases of indirect vertigo. No lesion of the ear could

be found and the vertigo disappeared after a period of rest and convalescence.

The four cases of vertigo associated with *acute otitis media* were of short duration, and recovered with the disappearance of the otitis media and did not recur.

There were only two cases of catarrhal *Eustachian obstruction*, and I am somewhat sceptical about catarrhal Eustachian obstruction being a cause of vertigo. These two cases were apparently relieved by a catheter inflation and by the passage of the bougie.

The eight cases of an *acute exacerbation of chronic suppuration* of the attic were the most satisfactory. The vertigo disappeared after the performance of a modified radical mastoid operation without opening or interfering with the labyrinth. In two cases a fistula of the ampulla of the external semicircular canal was found. In two pus was found in the middle ear dammed up by granulation tissue. In all the cases definite infection of the bone of the attic region was discovered, and when suppuration is present vertigo is an emphatic indication for a mastoid operation. The same may be said of the fifteen cases of *chronic suppuration*. A number of the cases showed a healed attic suppuration in which the vertigo then disappeared, but the labyrinth remained just as active and as excitable to the irrigation test as during the period of vertigo.

The eighteen *secondary sclerosis* cases were difficult and required prolonged treatment, with indifferent results. In a few of these cases with marked deafness and severe vertigo a labyrinth operation may be advisable, particularly when the mastoid operation has already been performed.

There were fifteen cases of early *otosclerosis* or chronic progressive deafness. Most of them were young, anxious women of the sea-sick, train-sick type. Fortunately the vertigo disappeared with suitable palliative treatment. Lumbar puncture was performed on some of these cases; the fluid was normal and the result negative. One or two cases of functional excitability of the labyrinth showed improvement after lumbar puncture. Babinski drew off 15 to 20 c.cm. of cerebro-spinal fluid in sixteen cases. He stated that cases of functional excitability of the labyrinth improved after a few days or after a second lumbar puncture. He also found that lumbar puncture did not improve those cases in which there was a definite lesion of the ear. This is what would be expected.

Influence of High and Low Blood Pressure

Some of the otosclerosis cases showed a low blood pressure. Richard Lake was of the opinion that a low blood pressure was a more frequent cause of vertigo than a high blood pressure. With the exception of this group of otosclerosis cases I have found the blood pressure to be normal, and there were no cases of high blood pressure. I am inclined to believe that the low blood pressure is the result rather than a contributory cause of aural vertigo, also that cases of otosclerosis without vertigo often have a low blood pressure. There is evidence that disturbances of the blood circulation have been the cause of vertigo. Some of the elderly patients complained of vertigo on rising quickly from the prone to the sitting position. The inhalation of amyl nitrite will bring out a latent nystagmus. Theoretically amyl nitrite should improve or abort the vertigo if it is due to anaemia of the labyrinth and increase the vertigo if it is due to hyperaemia. Inhalation of amyl nitrite in cases of arteriosclerosis, high blood pressure, and heart lesions is not without danger. There is a curious type of vertigo labelled "epidemic vertigo," because several members of a household have had it. No adequate cause could be found, and the only physical sign was a low blood pressure. Mygind has shown that compression of the carotid artery in cases of fistula of the external semicircular canal has altered the character of the nystagmus. These facts indicate that the labyrinth is sensitive to changes in the blood circulation. This question of blood pressure and circulation requires careful and scientific investigation.

Vertigo and Central Nervous Disease

Cases of vertigo arising from diseases of the central nervous system and particularly cerebellar abscess and thrombosis of the posterior inferior cerebellar artery are difficult to differentiate from those of direct vertigo, due to the labyrinth, more especially when they are accompanied by a lesion of the ear. These patients are sometimes too ill to respond to elaborate labyrinthine tests, and yet the differentiation between vestibular lesions and that of the cerebellum is of great importance. The cerebellar cases show greater incoordination of movement and the gait is more staggering. The vertigo occurs on movement only, and does not come on in sudden attacks when the patient is at rest like that of the labyrinth. The nystagmus is a coarser horizontal oscillation and is always present. It is not the fine, fleeting, rotary tremor of labyrinthine nystagmus. There are other signs of a cerebellar lesion such as facial paralysis and abnormality of the reflexes.

There were six cases resembling otosclerosis which have turned out to be early disseminated sclerosis. It is stated that 12 per cent. of the cases of disseminated sclerosis suffer from nerve deafness.

Functional Disturbance of the Labyrinth

Lastly, there were nineteen cases of so-called Ménière's disease in which no definite cause for the vertigo could be found—that is, there was no apparent lesion apart from the unilateral deafness. These cases might be labelled as a functional disturbance of the labyrinth. The labyrinth resembles a fine trigger easily pulled by some external stimulus. The attacks of vertigo were explosive and epileptiform. There was tinnitus and varying degrees of deafness, and the patients were usually middle-aged or elderly, often overworked and worried. The pathology of these cases is obscure, and they are parallel to migraine, epilepsy, and asthma. It is stated that this is the type of case which is due to an increase of the intralabyrinthine fluid and pressure, and it has been claimed that lumbar puncture and water depletion of the body improves these cases. I have had little experience of this treatment by water depletion.

Portman has designed and carried out an operation to drain off the excess of the endolymph through the saccus endolymphaticus. It is a difficult operation, and dilatation of the saccus cannot be diagnosed with certainty. Hautant has done a simpler operation, of opening the external semicircular canal to relieve intralabyrinthine pressure, with success. Cases of increased intralabyrinthine pressure are presumably analogous to glaucoma and may be compared with it. The ophthalmologist has the advantage of being able to measure the intraocular pressure with a delicate gauge known as the tonometer, and so verify any treatment for the reduction of pressure. Depletion therapy for glaucoma was tried in 1915 by Duke-Elder when these patients had been given an intravenous injection of hypotonic saline as in cases of cerebral compression. This treatment has been given up as unsatisfactory, but it was found that there was a decrease in the intraocular tension for twelve hours only. Perhaps one reason for giving up depletion therapy in glaucoma was the need for mental relaxation and quiet. The same applies to vertigo. If the patient is given such a potent diuretic as salyrgan he is in and out of bed every few minutes, with considerable disturbance of sleep. It is

difficult to accept the view that waterlogging of the body should affect the labyrinth on one side only. It is reasonable to expect that both labyrinths would be involved and, being symmetrical, vertigo should not occur. Again vertigo is not a symptom in cases of dropsy subsequent to renal and cardiac disease. However, Mygind and Dida Dederding are in favour of the theory of waterlogging.

Palliative Treatment

Palliative treatment was carried out in the greater number of these cases. Rest in bed and the exclusion of all stimuli likely to produce vertigo, and a mild calomel purge with the administration of luminal (1/2 grain) or bromide, were usually successful. If the blood pressure is low ephedrine or ergotin may be given. Tobacco and alcohol usually aggravate the vertigo, and should be suspended. A careful and detailed investigation of the patient's method of living should be made to find any contributory cause. An attack of vertigo can sometimes be aborted if the patient resolutely fixes his eyes on some neighbouring object and so restores his equilibrium. The psychological element in these cases is very marked, and the patient should be encouraged and reassured. For this reason any definite and detailed line of treatment is sometimes successful, but the variety of drugs and treatments prescribed indicates that at present there is no real specific for vertigo. In spite of this a large proportion of these patients recover. There are a number of cases due to suppuration of the ear in which the mastoid operation alone has been entirely successful and satisfactory. The labyrinth has not been touched and labyrinthotomy or labyrinthectomy has not been necessary.

Operations on the Labyrinth

Operations on the labyrinth for vertigo are comparatively rare, because such an operation is only performed:

1. When the diagnosis that the vertigo is caused by the internal ear is certain.
2. When the vertigo is so severe and frequent as to make the patient miserable and unable to work.
3. When all other remedies have failed.

It must be remembered that the operation destroys the hearing and is not usually performed unless there is a considerable degree of deafness. The cases which fulfil these conditions are few and far between. Richard Lake, who specialized in this operation, performed the labyrinth operation in fourteen cases only. Many patients refuse to have any operation, and improve with palliative treatment. The most satisfactory operation is known as superior and inferior vestibulotomy, in which the ampulla of the external semicircular canal is opened by a fine chisel. The slit-like lumen of the canal is easily recognized. If the chisel is then applied to the little ridge of bone between the fenestra ovalis and fenestra rotundum the promontory is flaked off and the vestibule opened. The nerve ending is destroyed by removing the modiolus with a curette.

Complete excision of the semicircular canals, or labyrinthectomy, is not generally performed, and I venture to say that it is unnecessary.

I have done six cases of superior and inferior vestibulotomy with satisfactory results. Mollison's method of injecting alcohol into the external semicircular canal was adopted and, in addition, the vestibule was opened by removing the promontory. All six patients had had a previous radical mastoid operation. The vestibulotomy or labyrinthotomy was easily performed, and with the present-day technique was not dangerous. After the operation there was considerable post-anaesthetic vomiting, a riotous nystagmus, and increase of the vertigo, but within three weeks the wound had healed and the patients were discharged from the hospital quite well. One patient who had had a radical mastoid operation done on both sides and was very deaf, had vestibulotomy performed on the right ear. The vertigo continued, and after an interval of three weeks a left vestibulotomy was performed with complete success. The operation has been done for tinnitus, but the result was negative and the tinnitus persisted.

About twenty-five years ago Ballance divided the auditory nerve within the skull to relieve a distressing case of tinnitus. The result was unsatisfactory. Cairns has carried out a similar operation of division of the auditory nerve for vertigo in four cases with success, Dandy has also done forty-two successful operations for vertigo, and, incidentally, in a few only has the tinnitus been relieved. This operation appears to be too formidable and too uncertain to be popular. Vertigo is not dangerous to life except when it arises from suppuration of the labyrinth, which may lead to meningitis.

Summary

Vertigo arising from the ear has distinctive features which make its recognition easy and certain. A hundred cases of vertigo have been classified according to their clinical etiology.

The pathology is discussed. There were no cases associated with high blood pressure. Lumbar puncture has produced negative results. The majority of the cases were given palliative treatment. The mastoid operations in cases of suppuration of the ear were very successful.

The indications for the destruction of the labyrinth or internal ear are the failure of palliative treatment, and a certain diagnosis that the vertigo arises from the ear.

EPIDEMIC STREPTOCOCCUS LARYNGITIS

BY

HERBERT TILLEY, B.S., F.R.C.S.

AND

DAN McKENZIE, M.D., F.R.C.S.ED.

"The evidence of modern bacteriology lends much likelihood to the view that epidemic diseases are constantly changing."—HANS ZINNSER.

From time to time medical practitioners have become acquainted with epidemic "sore throats" of streptococcal origin which have been traced to tainted milk or water supplies, and some of the outbreaks have not been free from a comparatively high mortality. In most of the cases the soft palate, fauces, tonsils, and upper *pharyngeal* regions have borne the chief brunt of the infection. Quite recently indeed (May 25th, 1935) Dr. F. E. Camps of Chelmsford called attention in this *Journal* to such an epidemic in that town at the end of 1933.[1] But according to information we have received from Dr. F. P. Sturm of Leigh, Lancashire, a streptococcus epidemic appeared there during last winter in which the *larynx* was chiefly affected. Reports from localities so widely separated, together with our own recent experiences in London, lead us to suspect that streptococcus throat infections, both pharyngeal and laryngeal, have recently been, and perhaps even now are, much more common and widespread than is generally realized. So far as we know, the laryngeal type of the disease, with which the present paper is chiefly concerned, does not seem to have been hitherto described, probably because the cases encountered have for the most part been mild and sporadic, and, being simply regarded as "influenza" or "a bad cold," have not been submitted to an expert examination of the larynx. Never-

theless, in this variety the larynx is chiefly or solely selected by the invading organisms; the course of the disease is subacute, and may be long drawn out; and, although seldom fatal, it may leave behind it a permanently immobilized vocal cord or cords and protracted or even permanent hoarseness.

We ought perhaps to mention that our interest in the disease was first aroused by its occurrence in one of ourselves. Consequently, we have had an opportunity of watching, as patient (D. M.) and observer (H. T.)—both laryngologists as it happens!—a hitherto undescribed laryngeal infection which, as already shown, may come within the survey of any medical practitioner. At the same time, the happenings in the course of the disease have furnished us with an explanation of the origin of those cases, hitherto undetermined, in which one or other vocal cord in an otherwise healthy larynx was later on found to be immobilized, and so apparently paralysed, but in which no lesion involving the origin or course of the corresponding recurrent laryngeal nerve could be discovered.

The following is a brief account of the case referred to:

Case 1 (D. M.).—On January 19th last, two days after a successful prostatectomy by Mr. Cyril Nitch, intractable and continuous hiccup set in. Next day the voice became rough and hoarse. There was violent paroxysmal cough, and the mucous expectoration contained streaks of fresh blood. Examination of the larynx by Mr. W. A. Mill showed the vocal cords to be red, congested, and approximating imperfectly as from muscular asthenia. A day or two later there was complete aphonia. About the same time the patient became aware of some obstruction to breathing in the larynx. These symptoms continued until February 8th, when H. T. saw the patient for the first time and found him "weak, weary, prostrate, and profoundly anaemic." (It may be interpolated that the haemorrhage at the operation was trifling.) Temperature 99° to 100° F, pulse 110. Breathing was slightly stridulous. There was complete aphonia, and attempts to speak were frequently interrupted by a toneless cough, which failed to expel secretions accumulating in the larynx. The soft palate was as pale as a wax candle. It was therefore a considerable surprise to find that the laryngoscope revealed a marked congestion and swelling of the laryngeal tissues and of those in the immediate neighbourhood. The free portion of the epiglottis was slightly swollen and oedematous, the aryepiglottic folds more so, and especially where they merged below into the arytenoids. These were represented by two large, pear-shaped, oedematous swellings, which encroached anteriorly on the vestibule of the larynx and posteriorly obliterated the pyriform fossae. Such obstructing elements, coupled with intense congestion of the ventricular bands, rendered it impossible to obtain any more than a fleeting glimpse of the middle third of each vocal cord, and their sluggish movements on attempted phonation. After the lapse of four or five days the swelling of the right arytenoid began to subside; stridor had disappeared; and a better view of the cords showed them to be absolutely motionless in the abducted position. During these early weeks the constantly recurring accumulation of secretions in and around the larynx set up violent coughing, and sometimes retching, just at the moment when the patient was falling asleep. By the end of February the inflammation had so far subsided on the right side of the larynx that the corresponding vocal cord, though still congested, had nearly regained its normal movement and the arytenoid oedema had disappeared. On the other hand, there was little obvious improvement on the left side. Even now (May 11th), with the patient once more out and about after an interval of nearly four months, although the oedema has disappeared the left arytenoid cartilage still shows defective movement on phonation. Both vocal cords are now normal in colour, but, owing to the restricted movement of the left arytenoid, adduction is incomplete, and consequently some hoarseness remains. At no time was any ulceration of the inflamed laryngeal tissues visible. The cough and the raising of blood-stained mucus continued for about three months. We must add that the vesical operation was rapidly recovered from.

Comment

This may be regarded as a severe though typical enough instance of streptococcus laryngitis. The hiccup, however, raises the question whether the infection had not also attacked the oesophagus. It is true that the influence of the abdominal operation cannot be altogether excluded. But the hiccup lasted for upwards of three weeks, and was accompanied and followed by acute pain during the passage of food, which was referred to the lower end of the oesophagus and the cardiac orifice of the stomach. Moreover, the pain continued, like the laryngeal symptoms, for three or four months, and was then succeeded by a capricious sensation of painful spasmodic stricture during deglutition at the same place. *X*-ray examination by H. K. Graham Hodgson, at this period, showed the oesophagus proper to be free from organic stricture. Consequently the patient is disposed to believe that the infection had induced, in addition to oedematous laryngitis, an oesophagitis and gastritis, with perhaps some superficial ulceration. This extension has not been reported before as far as we know, and Sturm did not come across any instance of hiccup in the Leigh epidemic. We have been able, however, to trace three other cases in London, only one of which, however, was under our direct observation, and one of them suffered from long-continued and painful oesophageal spasm.

Case 2.—Female, aged 46, was seized with a "bad cold" in October, 1934. She developed hoarseness and then aphonia. Cough was severe and paroxysmal, but there was no expectoration. Hiccup set in early in the course of the illness, appearing each time she ate anything and lasting for an hour or two. It was accompanied by pain and difficulty in swallowing referred to mid-thorax, and described as "something obstructing the passage of food that had to be pushed aside." So severe was it that she had occasionally to stop eating, and regurgitation took place with temporary relief. The hoarseness and cough disappeared after six weeks, but the dysphagia remained for no less than six months, and was associated with painful dyspepsia. In spite of all this the patient put on weight. The larynx was not examined until May, 1935, and then the cords were seen to be acting normally.

Symptomatology

Much of what follows regarding symptomatology we owe to F. P. Sturm (Leigh).

The disease appears in two forms: in the one, pharynx and larynx are both affected; in the other, the larynx alone is involved. In most cases the attack is sudden, hoarseness and violent coughing being the first symptoms. There is intense laryngeal redness, affecting the cords as well as the rest of the larynx, and extending to the rings of the trachea. In the course of a few days the hoarseness increases, ending sometimes in complete aphonia which may last for a week or two, while, as occasionally happens, if the inflammatory swelling that impedes the movement of the cords is slow in resolving, the voice will remain weak, toneless, and husky, it may be for several months. In the later stages we have noticed that the early bright red colour of the larynx loses its intensity and becomes dusky, while oedema is still present.

Pain is a common symptom, and sets in soon after the onset. Most people must have experienced the sensation of soreness that accompanies coughing during an ordinary attack of simple laryngitis, but in this streptococcal type the pain is severe, more or less continuous, and is referred to that side of the larynx which the mirror shows to be chiefly affected. It may persist along with the other symptoms for weeks or even months.

In the early stages a certain amount of inspiratory *stridor* from the narrowing of the laryngeal airway is not uncommon, the subjective sensation of obstructed breathing adding to the patient's discomfort. Dangerous dyspnoea arising from laryngeal oedema has not so far

been met with in Sturm's cases or in our own ; but F. E. Camps reports death from this cause in fulminating cases as early as the fourth day. Here is a case that was saved by a prompt tracheotomy.

Case 3.—Some thirty years ago, one of us (H. T.) saw a patient in whom the laryngeal oedema had so obstructed the air passage that suffocation seemed imminent, and tracheotomy was at once performed without any anaesthetic whatever. The patient has lived in good health since, and, although he cannot dispense with the cannula because both cords have remained permanently fixed in the middle line, a useful if gruff voice remains, which can be used without a finger being placed on the tube.[2]

The cough of streptococcus laryngitis is characteristic, being paroxysmal, violent, but ineffectual, and it often culminates in vomiting as in whooping-cough. It is readily induced by drinking, particularly if deglutition is badly co-ordinated by reason of the immobility of one or other half of the larynx.

The almost invariable and somewhat alarming *haemoptysis* calls for remark. In Case 1 it appeared as early as the first day of the illness, and lasted for three or four months. The expectoration, mucoid or muco-purulent, is either streaked or tinged with blood, and occasionally a small stringy clot may be seen. It differs from the more ominous pulmonary haemoptysis in being of a dark colour. The patient in Case 1 was definitely of opinion that the blood came from the larynx and/or the air passages ; but the observer is rather inclined to regard it as emanating from a superficial streptococcal ulcer concealed behind the cricoid.

The pharynx when involved appears bright red and inflamed, the lateral bands in particular being swollen, and small superficial ulcers or suppurating spots may be seen dotted about here and there over the pillars of the fauces and the tonsils. Considerable local tumefaction may develop, even, as in one of our cases, to the extent of simulating a peritonsillar abscess, but abscess formation is uncommon save with mixed infections. The cervical glands occasionally become enlarged and tender, and like the other phenomena may linger on in that state for several weeks before resolving.

Turning now to the *constitutional symptoms* we find them to be as a rule unexpectedly mild. Temperature is for the most part subfebrile. The pulse rate, however, is increased to 110 or more in adults, and general prostration with anaemia and leucocytosis may be present, as in Case 1. A prominent feature of most cases is free perspiration, particularly at night. Finally, the slow convalescence may be further retarded by the onset of cardiac symptoms, due to the influence of the streptococcal toxins on the myocardium.

Progress of the Disease

As we have indicated, the progress of the disease is often surprisingly slow, the inflammatory oedema of the larynx, unless it gives way to serum treatment, persisting sometimes for as long as six or eight weeks, and its subsidence is very gradual. We have known all the four cardinal symptoms—hoarseness, cough, haemoptysis, and pain—to linger on for three or four months, and, even after the disappearance of all the symptoms, some irregularity in the arytenoids and a certain lack of briskness in the movements of one or other cord may for a time persist. It is necessary, however, to emphasize the fact that these long-continued cases are exceptional ; the majority recover completely and spontaneously from the throat infection in a week or two, and the recovery is often as sudden as was the onset. On the other hand, we ought also to mention that a recurrence of the symptoms after an intermission of several weeks is by no means unusual whether the first attack has been mild or severe. It is obviously difficult to throw off the infection once it has obtained a hold.

Pathology

Cultures inoculated from the throat of Sturm's epidemic cases and our own sporadic cases have grown streptococci (haemolytic as a rule) in pure culture. It has come to our knowledge that occasionally the infection is mixed (staphylococci, *Micrococcus catarrhalis*, influenza bacillus), and in this event glandular and other abscesses have been observed. In most of the cases, however, the inflammation has not led to abscess formation, whether locally or at a distance. In like manner ulceration of the mucosa seems to be seldom induced, apart from the small shallow ulcers visible at times in the pharynx.

In comparison with the other manifestations of streptococcus invasion formerly observed in these regions, a matter dealt with by one of us two years ago,[3] this present laryngeal variety has so far proved to be of moderate severity only, and in the majority of cases, as we have remarked, the attack is of brief duration, and is not followed by any permanent change in the voice. It would seem, indeed, that such mild streptococcus cases in epidemic constitute one variety of that vague disease so often labelled " influenza."

We have found that most of the instances of delayed recovery have occurred in people over middle life, an observation in harmony with our experience that the (hitherto unaccountable) fixation of one vocal cord has not been seen before middle-age. We must add, however, that in the Leigh epidemic a number of children were attacked.

The oesophageal symptoms, if attributable to the streptococcus infection, may conceivably arise either as a reflex from gastric irritation as from an ulcer in or near the cardiac orifice, or, as they closely resemble those of achalasia, they may be due to a streptococcus neuritis of the sympathetic innervation of the lower oesophagus.

Prognosis

We have already mentioned that in the Chelmsford epidemic a few fatal cases of glottic oedema occurred. In the Leigh epidemic only one case threatened to end fatally, in consequence of the streptococcus infection lighting up a chronic pulmonary tuberculosis. So that we may say that apparently the disease has been less dangerous than might have been supposed. Further, the recovery even of the voice is generally complete. Only in a small minority does ankylosis of the crico-arytenoid articulation lead to permanent fixation of one or other or, as in Case 2, both vocal cords. The state of the voice will then naturally depend upon the position in which the cords are permanently fixed. If one cord is fixed in abduction while the other is moving freely, some, and it may be a considerable, restoration of the voice may be acquired in the course of a year or two, the mobile cord crossing the middle line to make contact with its passive neighbour during phonation.

As we have already remarked, this experience has furnished us with an explanation of some, at least, of those cases, hitherto puzzling, in which one vocal cord in an otherwise normal larynx is found to be immobile as if it were paralysed. The discovery, as a matter of fact, may be accidental, the patient being quite unaware of the laryngeal abnormality. In 1933 Miss T., aged 46, was referred to me by the Church Missionary Society because of " voice fatigue " after much speaking. The right vocal cord was immobile in the adducted position. I saw her again this week (June 19th, 1935) and the condition remains the same. (H. T.)

There is no need to enter in this paper upon a discussion of the sequelae of streptococcus infection. All we require to say is that the laryngeal variety is no less liable to them than the others.

Diagnosis

Apart from influenza and simple acute catarrh, this type of streptococcus laryngitis in its early stages may be mistaken for Ludwig's angina, laryngeal diphtheria, whooping-cough, and a foreign body impacted in the larynx.

In Ludwig's angina the grave constitutional prostration and the more massive and intense inflammatory swelling of the pharynx and larynx and sometimes of the cellular tissue of the neck ought to prevent any mistake. Laryngeal diphtheria, in turn, will be excluded by bacteriological examination, which should never be omitted. A streptococcal false membrane may form in the pharynx, as in one of our cases, but it differs from the diphtheritic membrane in colour, consistence, and attachment. In pertussis, which is not infrequent in elderly people, the early symptoms may resemble those of streptococcus laryngitis rather closely, as it occasionally commences with laryngeal congestion and some hoarseness. But the hoarseness is slight ; there is no laryngeal oedema ; and, as time passes, the cough becomes unmistakable. Finally, when confronted with a sporadic case of hoarseness, paroxysmal cough, and stridor, the possibility of a foreign body impacted in the larynx should not be forgotten, even although the patient may have no recollection of having swallowed one, or, as in certain types of neurosis, prefers to conceal the fact.

Under this heading we may mention that it is quite within the bounds of possibility for the oesophagus to be infected independently of the pharynx and larynx, with consequent hiccup and spasmodic stricture. Such cases are differentiated from organic stricture by *x*-ray examination or by direct oesophagoscopy.

Treatment

When swabs from the throat give a pure culture of streptococcus of whatever strain, a suitably large dose (20 to 40 c.cm.) of anti-streptococcus serum is the logical therapy. Even, indeed, when a culture shows other organisms as well as the streptococcus this may be regarded as the chief enemy, provided that the symptoms already described are clearly manifested. Naturally the earlier the remedy can be given the better. Sometimes the " scarlet " variety of the serum answers best ; at other times the " polyvalent " ; at other times again neither seems to have much effect. Our own experience of serum treatment, necessarily administered rather late, has not been very encouraging. It may clear up symptoms for the time being and yet fail to prevent a recurrence a few weeks later. There is no need for us to emphasize the necessity of guarding, as much as possible, against the onset of anaphylactic phenomena.

Apart from such specific treatment, the symptoms will require attention. The disturbing cough can be soothed by steam inhalations, and heroin, judiciously administered. An emergency tracheotomy will be required if dyspnoea becomes threatening, and preparations should be made for the operation before the necessity has actually arisen.

Acknowledgements.—In addition to expressing our deep indebtedness to Dr. F. P. Sturm for furnishing us with a clear and detailed account of epidemic streptococcus laryngitis as he saw it, we desire to offer our grateful thanks also to Messrs. W. A. Mill and W. M. Mollison and to Dr. F. H. Teale for their generous assistance in dealing with Case 1.

BIBLIOGRAPHY

Camps, F. E.: *British Medical Journal*, 1935, i, 1061.
Tilley, Herbert: Ibid., 1927, ii, 681.
McKenzie, Dan: *Journ. Laryngol. and Otol.*, 1934, xlix, 105.

PUERPERAL STREPTOCOCCAL SEPTICAEMIA

A REVIEW OF PREVENTIVE AND CURATIVE MEASURES

BY

H. F. SELWOOD LINDSAY, M.B., B.CH., D.P.H.

LATE RESIDENT MEDICAL OFFICER, BELFAST INFIRMARY

Puerperal septicaemia has been for many years the prime factor in the causation of " maternal mortality." The question, therefore, of its prevention and treatment constitutes a problem of first-rate practical importance to the nation. Broadly speaking, and from the point of view of incidence reduction, much can be achieved by the adoption of three main measures:

(*a*) Education of the public in the enormous importance of ante-natal clinics, the establishment of which makes it possible for septic foci and other abnormalities to be detected *early* in pregnancy, and timely advice imparted in the matter of raising general resistance to infection.

(*b*) Confinement in a properly equipped institution (hospital or nursing home), where the application of strict aseptic principles can be so much more readily facilitated, not alone at the birth itself, but also at all subsequent dressings, when sepsis may readily originate.

(*c*) Speedy isolation of all suspect cases to an " investigation " department, whereby risk of infection to other patients is reduced to a minimum, and a confirmatory diagnosis made possible in surroundings unattended by undue risks to the patient herself.

As the majority of fatal cases are traceable to a strain of haemolytic streptococcus, I propose here to consider briefly the special preventive and curative measures that have been employed in the streptococcal variety of infection.

Vitamin Therapy

Prophylaxis.—As might be expected, the most important of the vitamins in relation to this condition is vitamin A, and its chief value lies in the sphere of prevention. By the exercise of its function to repair breaches in the lining mucous membranes it serves the useful purpose of fortifying local resistance, and the earlier it is employed in the period of pregnancy the more formidable is that resistance likely to be. The vitamin next in importance is vitamin D, which, by its utilization of calcium and phosphorus to meet the requirements of the body, contributes in no small measure to the maintenance of resistance generally. The main sources from which these vitamins may be derived are four in number —namely:

(*a*) The diet, which should include whole milk, wheaten whole-meal bread, butter, cheese, eggs, green vegetables, carrots, tomatoes, and fruit.

(*b*) Accessory vitamin foods.

(*c*) Vitamin concentrates, one of halibut-liver oil being particularly useful.

(*d*) Ultra-violet irradiation, whereby ergosterol in the subcutaneous fat is converted into vitamin D.

In the ante-natal ward of Belfast Infirmary the patients receive prophylactic vitamin therapy from all these sources, and among 162 normal deliveries of patients transferred from the ante-natal to the labour wards during the year 1934 there were only three septic cases. Rest and isolation from marital contact must, however, also be taken into consideration. In the same year, among 678 normal deliveries of patients admitted direct to the labour wards from outside hospital, the number of septic cases was 25. On standardizing these figures for purposes of comparison we find that among the patients confined from outside hospital the incidence of puerperal sepsis was twice as great as among those confined from the ante-natal ward. This result would very probably have been still more convincing had it not been for the fact that a large number of admissions to the ante-natal ward antedated the commencement of labour by little more than a week.

Curative.—Here chief reliance must be placed upon the employment of a selected potent vitamin concentrate in large therapeutic doses. It has to be borne in mind,

however, that vitamins usually require more time to demonstrate their undoubted value than can be afforded once an acute streptococcal infection has actually commenced. Hence vitamin therapy as a curative measure should be regarded as of supplementary value.

Drugs

Quinine is one of the older remedies employed for germicidal action in the treatment of septicaemia. Two considerations are of interest and importance in connexion with its use. The first is an observation by Cushny[1] that in many cases of septicaemia where successful results have been claimed from quinine therapy, the dose was far too small to be capable of acting either on temperature or on microbe. The second relates to the fact, mentioned by the same author,[2] that the micro-organisms of septic fever have been found to be much more resistant to the action of quinine outside the body than are the protozoa, which leads us to ask whether the blood and tissues are not liable to serious injury from the amount of quinine required to act upon the organisms contained in them. We gave this drug an extensive trial at Belfast Infirmary, with very disappointing results. The opinion formed was that quinine, administered in regularly repeated maximum *therapeutic* doses, was not a sufficiently potent germicide to check the activities of virulent haemolytic streptococci in the blood stream ; and since massive doses expose the leucocytes and tissues to the risk of serious injury, the drug cannot be recommended in the treatment of this disease.

Disulphamine is one of the more recent preparations advocated for their antiseptic properties. It is held to promote hyperleucocytosis, principally of the polynuclear type, and is administered in the form of gelatin capsules (each containing 7½ grains) dissolved in water. It is incompatible with alkalis. At Belfast Infirmary the preparation was given an extensive trial, but the results yielded were not convincing.

Collosol argentum, injected intramuscularly, is another preparation advocated for bactericidal action. At Belfast Infirmary there were some cases in which it seemed to do good, but, speaking generally, its usage did not meet with any uniform success.

Collosol iodine, in daily hypodermic injections of 1 c.cm., has been found of definite value in the treatment of rigors at Belfast Infirmary.

Mercurochrome, intravenously, has been advocated in recent years, but the results have fallen below expectations. *Perchloride* and *salicylate of mercury* have also been tried.

Eusol, given intravenously in normal saline, has not proved a success, while *flavine* can claim no better results. Many drugs of germicidal repute fail in the treatment of this condition because the maximum dose that can be permitted is insufficient to cope with the virulence of the infection.

Arsenic is of value in the treatment of the associated anaemia. Lord Horder[3] recommends it in the form of sodium cacodylate intramuscularly, and often combines with it *nucleic acid*, a stimulant to leucocytosis.

The Glycerin Treatment

Prophylaxis.—Treatment consists in the injection of sterile glycerin into the cavity of the uterus, following labour, in all cases attended with suspicion. Glycerin is possessed of well-known healing properties, as a result of which its employment in the manner indicated induces a much more ready recovery of normal healthy tone in the raw inner uterine surface. It is therefore of decided value as a prophylactic expedient.

Curative.—By its action in promoting a free flow of lymph from the uterine wall into the uterine cavity, the glycerin treatment produces a " lavage à retro " through which infecting bacteria are washed away. In addition, the lymph itself possesses bactericidal properties. In view of the virulence by which streptococcal infections are commonly characterized, however, and of the fact that the treatment is purely local in its action, glycerin therapy, to be of material benefit as a curative measure, must necessarily be employed at the outset of the infective process ; otherwise the local defence may well be overcome before the treatment can be afforded a fair trial, in which event its role must be considered as of purely supplementary value.

Vaccines

Prophylaxis.—Stock vaccines are, in my experience, of decided value in the preventive campaign against puerperal streptococcal septicaemia, particularly when there are a large number of patients to be immunized. At Belfast Infirmary we once had an epidemic among patients who had had perfectly normal confinements and who had not been examined per vaginam. Exhaustive investigations failed to disclose any external cause for the outbreak. It was therefore promptly decided to take throat swabs from all the lying-in patients, numbering sixty, with the interesting result that fifty-two of them demonstrated the *Streptococcus haemolyticus*, a pure culture being obtained in several instances A stock vaccine was then prepared (1 c.cm. = 5,000,000 cocci), and each of the " positive " patients received an initial dose of 1 minim, followed, after an interval of five days, by a second dose of 2 minims. The adoption of this procedure was followed by the speedy termination of the epidemic, only one of the patients so immunized developing puerperal pyrexia.

Curative.—When it comes to the question of curative treatment by vaccines, however, the outlook is generally not at all so bright, though exceptional cases undoubtedly occur showing good results. An autogenous vaccine is here to be preferred to a stock, though this involves the disadvantage of having to wait until it is prepared. To bridge the difficulty the temporary employment of an appropriate stock vaccine has been advised. We gave autogenous vaccines an extensive trial at hospital, with very disappointing results. One has to bear in mind that a formidable degree of exotoxaemia is frequently of early and rapid development in these cases, and that if the tissues are to be preserved from its deadly effects speedy neutralization becomes imperative. Having regard, therefore, to the nature and virulence of the infective process in this condition, and to the results already referred to, one does not feel disposed to advocate vaccine therapy as an exclusive method of treatment in this condition. The judicious employment of a vaccine along with appropriate serum treatment affords much greater likelihood of success.

Anti-streptococcal Sera

These belong to the anti-bacterial class, their purpose being to destroy in the blood stream the organisms against which they are specially prepared. They are divided into two main varieties—polyvalent and univalent. The idea of introducing a polyvalent, or multivalent, serum is based on the fact that streptococci exist in groups, and a serum prepared against any one group is not by any means specific in respect of antibody for another group. The experiment, however, has not proved a success. In this condition our attention is confined to one group of streptococci, and it the most virulent of them all ; and, apart altogether from the question of antibody content, a polyvalent serum is, at the best, only in part directed against it. At Belfast Infirmary we gave this variety the test of a very fair and extensive trial, but met with extremely disappointing results.

A univalent *Streptococcus haemolyticus* serum is, in comparison with the polyvalent type, certainly to be preferred, because it is entirely concerned with the group of streptococci involved in this disease. Both types, however, are possessed of common failings. To begin with, although each is primarily designed to destroy streptococci in the blood stream, neither is prepared to deal effectively with the condition of exotoxaemia which very frequently precedes, and always accompanies, the septicaemic condition ; and it is, after all, the toxin that does chief damage. If either type of serum were sufficiently concentrated in respect of antibody against haemolytic streptococci to overcome the septicaemia—assuming early

and generous dosage—additional toxin formation would then be controlled, though there would still remain the existing degree of toxaemia to be neutralized if its serious ill effects were to be avoided in time. Here again, however, we are doomed to disappointment, for, in the words of a very eminent authority[4] in reference to anti-bacterial sera, "by none of the methods yet employed have these sera been produced with a sufficiently rich content of antibody to lead to any uniformly good results."

Antitoxin Sera

Streptococcus antitoxin (scarlatina), more commonly known as anti-scarlatinal serum, constitutes, in my experience, the most effective method of treatment at our disposal to-day. Its usage is based on the fact that the streptococcus of scarlatina and that of puerperal streptococcal sepsis belong to the same bacteriological group, the haemolytic group, and produce an identical toxin, the Dick toxin. Hence, from this consideration alone, a serum prepared to neutralize the toxin of scarlet fever would naturally be expected to exercise the same effect upon that produced in the puerperal infection. In practice this is found to be the case, the serum acting as a neutralizer of exotoxins formed by haemolytic streptococci in the body.

Prophylaxis.—The chief indications for a prophylactic dose of anti-scarlatinal serum are: (1) marked anaemia; (2) the presence of a septic focus or foci; and (3) manipulative intervention on any large scale. The most suitable dose for prophylactic purposes is 10 c.cm. intramuscularly, immediately following the third stage of labour. In the presence of a septic focus, for example, a dose of serum at this point will be found instrumental in reinforcing a depleted resistance by neutralizing toxins that are being absorbed. I have seen several patients in hospital who appeared likely candidates for sepsis. They were all given a prophylactic dose of this antitoxin following the third stage, and in none of them did sepsis develop. As examples I may cite:

(*a*) Macerated hydrocephalic monster; foetus very foul; placenta decomposed. Prophylactic dose of anti-scarlatinal serum immediately after third stage. Temperature remained normal and puerperium was quite uneventful.

(*b*) Patient suffering from tonsillitis, stomatitis, and other lesions of the mouth. Confinement quite normal. Prophylactic dose of anti-scarlatinal serum immediately following third stage. Puerperium quite normal.

(*c*) Manipulative case.—Umbilical cord doubly twisted around child's neck; quick manipulation necessary to effect release; third stage complicated by retention of large portion of chorion, necessitating manual removal. Intrauterine douche given, followed immediately by prophylactic dose of anti-scarlatinal serum. Puerperium quite normal.

(*d*) Manipulative case.—Transverse presentation, with hand and foot presenting. Considerable manipulation necessary to carry out bipolar podalic version. Prophylactic dose of anti-scarlatinal serum immediately after third stage. On the first three evenings following, the respective temperatures read 100°, 99.6°, and 99° F. Subsequently temperature became normal, and no signs of any description appertaining to sepsis ensued.

Prevention of Anaphylactic Shock.—Prior to administering a dose of serum it is imperative to ascertain whether or not the patient requires to be desensitized, and to act accordingly. Thus, with a history of one or other of the specific fevers or, apart from that, of a previous dose of serum at an interval of ten or more days, the following skin test should be carried out:

"A small quantity, say 0.25 c.cm., of normal horse serum (or antitoxin) is injected intradermally or rubbed into a scarified surface. There occurs, if anaphylaxis—or a toxic idiopathy to horse substance—exist, an urticarial patch sometimes progressing to a vesicular eruption with a surrounding area of erythema. This occurs usually within half an hour, but is occasionally delayed. If anaphylaxis be demonstrated, the patient should be desensitized."[5]

Curative.—The moment "puerperal pyrexia" is diagnosed, a dose of 60 c.cm. anti-scarlatinal serum should be administered without waiting for the result of the routine investigations. So many of these cases subsequently prove to be of streptococcal origin that the adoption of this procedure often ensures not only the saving af a patient's life, but also a very material shortening of the duration of illness. The serum should be given slowly and by the intramuscular route. At this early stage neutralization of toxins is much more readily achieved, with consequent benefits of far-reaching import to the patient. These include the preservation from irreparable damage of the cardiac muscle and other tissues for which haemolytic streptococci have a special affinity. Furthermore, the work of the leucocytes in augmenting local resistance, and ingesting streptococci which may be encountered in the circulation, is thereby prevented from being undermined by an exogenous poisoning of the vital body tissues. In the more severe cases a repeat dose of 30 c.cm. should be given after twenty-four hours.

Anaphylactic Precautions.—If the initial dose of serum has been administered reasonably early in the disease, it is decidedly the exception for a patient to need a further dose at so great an interval as ten days. Such an exception would, of course, necessitate due observance of the anaphylactic precautions already discussed. It should also be borne in mind that this idiopathic phenomenon may occur with a third dose of serum if administered at an interval of more than ten days from the first dose.

Value of Anti-scarlatinal Serum

Evidence in support of the claim that anti-scarlatinal serum constitutes the most potent form of treatment at our disposal to-day may fittingly be considered here. One is not unmindful of the fact that cases sometimes occur where recovery takes place spontaneously. An attempt should therefore be made to allay any possible doubts that attribution of satisfactory results to this serum bears full justification. To begin with, a Dick test will decide as to the presence of streptococcus antitoxin in the body; and the fact that cases are recorded showing spontaneous recovery is explained by the knowledge that in certain patients' blood this antitoxin already exists in considerable quantity, in some instances of a sufficiency to neutralize the exotoxins that issue into the circulation. Hence the value of anti-scarlatinal serum, itself a *Streptococcus haemolyticus* antitoxin, at once becomes apparent in the treatment of the disease, where its administration will serve either to compensate for antitoxin deficiency or to augment the quantity present. The more antitoxin, the less toxaemia.

From the clinical standpoint the value of the treatment can conveniently be determined by making a comparison of the "pre-serum" condition with the "post-serum" condition of a series of patients injected reasonably early in the disease. With patients who are at all severely ill before serum injection, it is highly improbable that the quantity of streptococcus antitoxin in the blood is great; and when, twenty-four hours after *early* serum administration, they show a definite and generally progressive change for the better, as was the rule in my experience, the efficacy of the treatment is measured.

At Belfast Infirmary during the year 1930—the first complete year in which we used this serum as a routine measure—the total number of cases of puerperal sepsis admitted to the isolation department was twenty-seven, of which number twenty-two were found to be suffering from puerperal haemolytic streptococcal sepsis. These latter all received the anti-scarlatinal serum treatment (Parke, Davis and Co.), and no fewer than twenty-one of them made a good recovery—a percentage recovery rate of 95.45. The chief reason for this very satisfactory result lay in the fact that the majority of the cases were embraced by the intern epidemic already referred to, which meant that they were immediately accessible to prompt treatment.

During the succeeding four years the results with this method, among patients received in reasonable time, have been such as to justify completely the spirit of optimism which prevailed at the end of the first year's trial. During the twelve months ending March 31st, 1935, no fewer than eighty-three cases received the anti-scarlatinal serum treatment at Belfast Infirmary; the large majority of these were confined outside hospital, many

of them being severely ill for several days prior to admission. Despite this handicap, however, there were sixty-eight recoveries, representing a percentage recovery rate of 81.92, a figure which might well have been exceeded under more favourable circumstances.

It cannot be too strongly emphasized that *early administration* and *generous dosage* are factors of supreme importance, and that if these essentials are observed a very material reduction in the number of deaths from this disease may confidently be expected. Opinions based upon indifferent results from fourth- and fifth-day administrations are of little value, since failure in such instances is primarily due to lateness and, it may be, to too small dosage. A late initial dose gives attacking haemolytic streptococci greater time and opportunity to invade the circulation, multiply at a rapid pace therein, and freely elaborate their toxins. In these circumstances the phagocytic value of the leucocytes, of which the polymorphonuclears play a leading part, becomes negatived by the steadily increasing army of invaders. The blood stream then becomes so drenched with toxins that neutralization of them is impracticable ; and even if it were not so the deadly effect of these toxins is by this time imprinted upon the tissues of the unfortunate patient.

Experience convinces me that to avoid such disastrous consequences as these, the *early* and *generous* employment of anti-scarlatinal serum may be relied upon with every confidence.

I desire to acknowledge my indebtedness to Mr. T. S.-S. Holmes, M.Ch., F.R.C.S., and to Dr. T. Howard Crozier, B.Sc., M.R.C.P., for permission to carry out these investigations.

REFERENCES

[1] Cushny: *Textbook of Pharmacology and Therapeutics*, revised tenth edition (Edmunds and Gunn), 1934, xli, 546.
[2] Idem: Ibid., 1934, xli, 545.
[3] Horder: *A Textbook of the Practice of Medicine* (ed. Price), fourth edition, 1933, Section II, p. 52.
[4] Horder and Matthews: Ibid., 1933, "Immune Therapy," p. 30.
[5] Idem: Ibid., 1933, p. 26.

PRINCIPLES OF RADIOLOGICAL TREATMENT AND THEIR BEARING ON HOSPITAL X-RAY ORGANIZATION

BY

H. CHAMBERS, C.B.E., M.D.

AND

S. RUSS, C.B.E., D.Sc.

BARNATO JOEL LABORATORIES, THE MIDDLESEX HOSPITAL

The Position Attained in Radium Therapy

The position to-day in Great Britain is that for a country of its size and population the general level of treatment of malignant disease by radium compares not unfavourably with any other. The excellent results at such a centre as l'Institut du Radium in Paris are not a reliable guide to the general level of attainment throughout France ; the same remark is not so applicable in the case of Sweden, for the Radiumhemmet at Stockholm is able to control, to a great extent, the form of treatment of a large percentage of the patients who require radium treatment throughout the country. But the small Swedish population and the relatively large economic resources on which the Radiumhemmet can rely combine to make a system that, while serving them extremely well, is not one which could be applied in general. Even with our much bigger population we shall very soon be in the position that we need not fear a comparison of statistics.

Our present position in radium therapy is mainly due to the medical groups or individuals by whom the treatment has been given, but there have been three contributory factors which have played an important part in the development of this form of treatment. First, there is the service rendered by the Medical Research Council in 1921 in forming research centres throughout the country, their main functions being to explore the possible ways of using radium in the treatment of malignant disease. Periodic reports issued under the heading "Medical Uses of Radium" have been prepared by the Radiology Committee of the Council under the chairmanship of Sir Cuthbert Wallace ; these reports have discussed the development of technique, the advances in our knowledge of radium reactions, the importance of pathological as well as clinical diagnosis, and finally they have exhibited comparable statistics relating to several sites of cancer.

Secondly, there are the services rendered by the National Radium Commission since 1929 in ensuring that the large quantity of radium put at its disposal by the National Radium Trust is, in the words of its Charter, administered so as:

"to make arrangements for the proper custody, equitable distribution, and full use of the radium which may from time to time be the property of the Trust with the object of promoting the treatment of the sick throughout Great Britain and the advancement of knowledge of the best methods of rendering such treatment and of securing due economy in the use of radium for the purposes of such treatment. . . ."

The chief steps taken by the Radium Commission were the concentration, so far as possible, of such work at the chief university medical centres, the exploration of the facilities not only for radium but for all the ancillary services, and the requirement of guarantees from all participating National Centres that methods of treatment (selected and agreed upon by the medical members of each centre) should be carried out for long enough to enable their value to be determined statistically. Five-year figures from the Radium Commission cannot appear until next year, but a "Preliminary Report on Radium Treatment in Cancer of Certain Sites" has recently been published, and this is to be followed by similar publications.

The prestige of British physicists in the domain of radio-activity has contributed to the advance of radium therapy. The work of men like Lord Rutherford leaves its mark on the whole field of science, but it also has a distinctive effect upon the nation's science. As a consequence, knowledge of radio-activity became widespread here at a time when this could not be said of many other countries, and thus developments of technique were made very much more easily. An instance which comes to mind is the technical advance in the use of radon, which was initiated by the late Professor Joly so long ago as 1914.

It is submitted that the Medical Research Council and the National Radium Commission have been largely contributory to advances in radium therapy, and that the lack of similar supporting and co-ordinating help is now being felt in the domain of *x*-ray therapy.

Facts and Tendencies in X-Ray Therapy

It is probably true to say that up to the year 1920 *x*-ray treatment developed chiefly in the light of clinical experience, and from the technical side the exponents of it received the amount of support from manufacturers of apparatus which they asked for ; the voltage and output of *x*-ray tubes were increased by gradual stages.

But an epoch, and as it turned out a not very happy epoch, was in 1920 associated with the name of the town of Erlangen, where Drs. Seitz and Wintz laid down certain working principles in the treatment of cancer. Briefly, this mode of treatment was based on the idea of the so-called "carcinoma dose." For reasons which are rather difficult to discover there was a pilgrimage of radiologists to Erlangen, and the teaching was brought over to this country and practised as the "Erlangen treatment" or "deep-therapy treatment." Stripped of its non-essentials this form of treatment aimed at giving, in the shortest possible time, a dose which would be fatal to the carcinoma cells of the growth, the damage caused to general health being considered of minor significance. Imposing *x*-ray apparatus, combined with a cut-and-dried quantitative claim to the dosage adequate in the treatment of cancer, were two things which contributed to the favour which the method enjoyed for a few years, but more especially it had the practical advantage, shared with surgery, that the treatment could be completed in a comparatively short time. The position to-day is that there are few radiologists who administer at one or two sittings these carcinoma doses, and the claims made were actually of the greatest disservice to the sound development of *x*-ray therapy.

Meanwhile radiologists in other countries, notably France, were pursuing systematic studies on the reactions of the body and of malignant growths to *x* rays, and these are at last having an influence upon practice. The most noteworthy clinical research of this character is, by general consent, that of Dr. Coutard; but the results of this work are to be learnt far more effectively by active contact with the work of his clinic than by his infrequent publications, most valuable though these are. So far from *x*-ray treatment being a comparatively easy treatment, Dr. Coutard, after long experience, says two things, one being that the *x*-ray treatment of cancer is still very difficult, and the other that it is often very dangerous. According to him it is impossible to treat quickly many of the commoner forms of cancer, such as cancer of the breast and rectum, composed as they are of very differentiated types of cells. Successful treatment requires repeated daily doses, continued until an effective total dose has been administered, each dose being so small that no damage is done to blood vessels and surrounding tissues. He considers that heavy radiation in these cases is directly responsible for encouraging the development of malignant glands and general metastases. Though it is possible to treat successfully in a comparatively short time, by using heavier doses and greater intensity, the more superficial types of malignant disease, especially those arising in situations where injury to the normal structures is of minor importance and easily repaired, the treatment of the deeper infiltrating cancers, with very differentiated cells, requires a different method. At these sites it is clearly essential that damage should not be done to the blood vessels, and the treatment must be slow; it actually lasts two, three, or four months. The most important principle of successful treatment is "primum non nocere." The radiation treatment of cancer is essentially a biological problem depending on the varying response of different cells, normal and malignant, to *x* rays, a fact not to be lost sight of in the desire for more elaborate machinery and *x* rays of greater penetrating power.

Nothing could be more obvious than the diametrically opposite views of Wintz and Coutard, but one method of treatment has been largely abandoned while the other is being increasingly adopted in other countries. Coutard has already obtained valuable results of long standing.

Qualifications of the Radiologist

Nothing can be more fallacious than to suppose that a nation possessing a few brilliant exponents of any form of therapy has necessarily got such treatment shared by its people at large, and if there is going to be any radical change in the level of *x*-ray treatment in this country it cannot be accomplished by equipping centres with high-grade apparatus unless there is a high standard of qualification for the work of those in charge. The standpoint adopted here is that those who practise *x*-ray and radium treatment and hold responsible positions at big centres should have the same qualifications and clinical experience as are required of members of the medical and surgical honorary staff.

It is common knowledge that the diplomas in radiology, excellent purposes though they serve, do not emphasize the importance of "radiotherapy," and it would be a mistake to suppose that the possession of this diploma was a guarantee of a man's qualifications for conducting and directing the *x*-ray therapy of cancer. In the opinion of Coutard, an experience of radiological treatment covering a period of about four years is necessary for this purpose. It seems to be inevitable that a prolonged experience is necessary before the radiologist is in a position to co-ordinate biological reactions with the doses of radiation which have produced them.

Physics and the Rationale of Treatment

Physicists have contributed to the present-day rationale of treatment by devising a basis of measurement of *x* rays as used clinically and by the measurement and comparison of the doses at different levels in the body. We are not aware of similar publications prior to that communicated to the Physical Society in 1923 entitled "The Measurement of *X*-Ray Intensity and the Necessity for an International Method." Shortly afterwards an *X*-Ray Unit Committee was formed under the chairmanship of Sir William Bragg, its work being helped by a grant from the Medical Research Council on the recommendation of its Radiology Committee. Partly as the outcome of the work of this committee and of the National Physical Laboratory, with joint action by similar laboratories in France, Germany, and the United States of America, agreement was found for the establishment of an international unit, the "r" unit. Its medical use quickly followed, and it is not too much to say that it is the most important aid to the dispensing of accurate doses of *x* rays which has been put into the hands of the radiologist.

The data upon depth doses have proved of very great value to the radiologist, but there has been a disposition in some quarters to apply these data too rigidly and to interpret their implications incorrectly. The radiologist's desire for larger percentage depth doses has led to requests for machinery of higher voltage and *x* rays of greater penetrating power, and the electro-technical expert has produced a machine able to produce a million volts and an *x*-ray tube which will stand the tension. Such tubes are in use, though not in general use, but they may increase unless other counsels prevail. The arguments in favour of their use are that they do what the radiologist has asked for; the rays are considerably more penetrating than *x* rays at 200 kV, though not as penetrating as the more penetrating types of γ rays from Radium C. But there are arguments against their use which should receive the most careful consideration before a general policy of adoption can be recommended with confidence. First there is the feature of gigantism about the higher voltage installations; the man becomes subjugated to the machine, the *x*-ray tube has to be

fixed, and the patient accommodated to the beam. This is perhaps one of the most vital indictments of the million-volt appliance.

Though we cannot lightly set aside the requirement of a bigger percentage depth dose, there are other ways in which it can be realized without resort to these very high voltage plants. Apart from the use of radium in large units a greater percentage depth dose can be obtained by increasing the focal skin distance when using *x* rays at 200 kV. This latter has become a practical policy with the advent of newer types of tube, which give a larger yield of *x* rays.

One important consideration in depth doses is that it is extremely easy to pay too much attention to the expression "percentage depth dose." The vital thing is what doses may be given to the carcinoma cells at various depths in the body, and the percentage dose calculated in terms of a single exposure of *x* rays may well give the impression that the figure resulting is rather absolute in character. This is far from the case, for if we begin to think of total depth doses we see that the total dose which can be given to a group of cells at a depth in the body not only depends upon the number of ports of entry, but also upon the actual intensity of the radiation employed. This arises from the fact that the reaction of the skin (the bogy of the therapist) is a function of the intensity of the radiation employed, of the time intervals, as well as the total dose. It is many years since experiments showed that it was possible to reach a limiting, though useful, intensity of radiation which the skin could more or less indefinitely support. It has been left to the genius of Coutard, making use of this condition in *x*-ray practice, to show that he can give a large cumulative dose to groups of malignant cells at a depth in the body without even a severe skin reaction by giving daily small doses of radiation.

Future Organization

The present time is one which finds many institutions installing new *x*-ray apparatus and discussing the administrative needs of therapy departments. The decisions reached are very important ones, for they will influence the treatment and prospects of life of thousands of patients. The radiologist has to decide between treating his patients with *x* rays at 200 kV and adopting prolonged treatment, and alternatively making the hazardous jump to half a million volts or more, knowing beforehand something of the technical difficulties involved, the limitations and hindrances inevitably associated with a beam whose direction or inclination may have to remain unchangeable, and that such experimentation is very costly.

It is evident that the general tendency of the more successful centres of radiotherapy is to increase the period over which treatment is given, and this extension of the time may well cause very big changes in the way in which this kind of work should be organized. If patients are to be under daily treatment for periods ranging from sixty to ninety days, it is questionable whether the organization of general hospitals, with the exception of those with special interests in cancer, is particularly fitted for such an exacting demand. It looks as though *x*-ray treatment in the future may have to be organized on the lines of sanatorium treatment.

In any case the problem is evidently becoming so big, so complicated, and so full of essential but intricate detail that the organization of this service for the country requires well-considered schemes, so that advantage can be taken of existing knowledge, and large sums of money and individual toil shall not be wasted in unproductive effort.

FATAL CASE OF JAUNDICE

BY

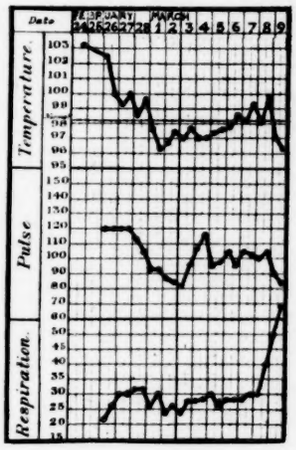
R. M. LITTLEDALE, M.R.C.S., L.R.C.P.

After reading the article on leptospiral jaundice in the *Journal* of March 30th I am prompted to publish this case. Here also the aetiological problem was very difficult ; in actual fact it was never solved. The case occurred on a small poultry farm in the country, consequently the facilities for bacteriological and other examinations were not such as one would get in a general hospital. Such tests as were carried out were done by Dr. Ponder and his staff at the Maidstone laboratory, and I should like to take this opportunity of thanking them for the help and advice which they gave me in this case.

Case Record

The patient, a strong, well-built man of 44, was first taken ill on February 24th, 1935. He then complained of joint pains and a sore throat ; he went to bed, but did not send for me till the 26th. When I first saw him he was complaining of pains in his back and in the larger joints, a general feeling of lassitude, and a sore throat. Headache was present, though not severe.

On examination his throat and tongue gave the appearance of a scarlatinal infection. Examination of the chest and abdomen revealed no abnormality, and no rash was discernible. Temperature was 102.4° F. Urine was clear and contained no albumin or sugar.



On the 27th, after the patient had passed a very restless night, the clinical picture was much the same. A few rales appeared at the base of the right lung ; the temperature fell to 99.2°, and respirations increased to 30. On the 28th, after a slightly more restful night, the patient became markedly jaundiced. (Here it may be of interest to add that he was jaundiced—diagnosed at the time as catarrhal—in 1921.) Examination of the abdomen revealed slight tenderness over the gall-bladder area, but neither liver nor gall-bladder was palpable. Rectal examination showed no abnormality. The right lung base presented impairment of resonance and tubular breathing. Temperature was 100.4°, and respirations 32. Stools were dark brown and of a normal consistency. Urine contained bile, but no albumin or sugar.

On March 1st the condition remained much the same ; the temperature dropped to 98°, and respirations to 24. On March 2nd the patient said he felt better. Jaundice had increased. The apex beat now became very irregular—about seven or eight normal beats followed by a period of auricular fibrillation and then back to normal rhythm again, and so on. Signs of pneumonic consolidation for about two inches above the diaphragm on the right side were now fairly well established. Temperature was 97.6°, and respirations 24. On March 3rd, after a night of delirium, the patient was very euphoric. The jaundice had now become an intense bronze, and the mouth was exceedingly sore and dry. The condition of the heart had improved slightly—digitaline cristallisée, 1/240 grain, was given four-hourly—but was still irregular. The consolidation was spreading across to the base of the left lung. Still there was no physical abnormality detected in the abdomen, beyond a slight resistance of the upper right rectus. The stools were black, but this was undoubtedly due to the administration of an iron mixture at the onset of the illness. Temperature was 98.2°, and respirations 28.

On March 4th no sleep was obtained with medinal ; the pulse became feeble, but less irregular. Cardiazol 1 c.cm. was

injected subcutaneously. The lung signs remained unaltered. Later in the day the pulse became more forcible. Flatulence was now a marked and troublesome feature, but was relieved by enemata. The urine contained bile and chlorides, but no albumin or sugar. Temperature had now fallen to 97°.

On March 5th the pulse was considerably improved, and had become full and regular. Flatulence was still marked. An interesting feature from now until his death was the excessive amount of urine passed by the patient, as much as 104 oz. being passed in the twenty-four hours on two or three occasions. There was little change in the physical signs in the lungs. Temperature was 97.6°, respirations 26, pulse 98.

On March 6th nausea became evident. Flatulence was still pronounced, and hiccup occurred in the morning. The mouth was by now exceedingly raw and painful, and, for the first time, the stools appeared putty-coloured. The chest signs seemed less marked. Gardenal was given at night.

On March 7th, after the patient had passed a delirious night, the jaundice seemed to be a little less pronounced. The abdomen was very distended, and enemata only gave temporary relief. Hiccup was not so obvious as on the previous day. The stools were soft and had the appearance of "silver fish." Examination of the chest now revealed an increase of sounds at the right base. Temperature was 98.4°, pulse 106, and respirations 28.

By March 8th the patient was very distressed, flatulence causing considerable discomfort. A faint, slightly raised, morbilliform eruption was now just discernible through the jaundice all over the body. The heart sounds were feeble, but with a regular pulse and apex beat. The abdomen had become a little more tender over the gall-bladder area, but no intra-abdominal viscus was palpable. Stools were still loose, with the "silver fish" appearance. Urine passed late at night was cloudy, and microscopical examination disclosed red blood corpuscles and epithelial debris. Temperature was 99.8°, and respirations 40. The temperature rose to 101° just before midnight. Gardenal was taken at night.

On March 9th, the last day of the illness, after a very delirious night, the patient appeared more rational. Respirations increased to 50. At about 5 p.m. respirations had further increased to 56 and the pulse become progressively feebler. At 7 p.m. the patient passed about two ounces of brown faeces streaked with blood. At 9.15 p.m. a large, soft, "silver fish" stool was passed. Urine was now loaded with red blood corpuscles and epithelial debris. At 11 p.m. the patient was in a state of collapse, and the pulse was barely perceptible. Respirations increased to 60. Cardiazol 1 c.cm. was again taken. Oxygen was administered throughout the day, but with no beneficial effect. Just before death, which occurred at 11.30 p.m., the patient passed a putty-coloured stool and about two ounces of bright red blood per rectum.

Necropsy

Post mortem, intense jaundice was the outstanding feature. All the internal organs examined were markedly bile-stained. There was no evidence of new growth and no pus to be found anywhere. The liver was slightly enlarged, but the gall-bladder was normal in size and contained inspissated bile. The kidneys were both enlarged. Nothing abnormal was found in the stomach, beyond bile-staining. Both lung bases were consolidated, but no pus was discovered. The pleurae covering the lung bases were loosely adherent to the diaphragm. There was no evidence of any endocardial lesion in the heart or of myocardial degeneration visible to the naked eye.

Histological and other Examinations

The wall of the gall-bladder was congested, and section revealed acute inflammation of the mucous membrane. Both kidneys showed cloudy swelling. There was round-celled infiltration about the portal canals, otherwise the liver was normal. The spleen was markedly congested.

A throat swab taken on February 26th was negative for diphtheria. Blood Wassermann reaction was negative. Culture from blood taken on the seventh day of the illness remained sterile after forty-eight hours' incubation. Culture from throat swab taken on the seventh day of the illness yielded a pneumococcus. White cell count taken on the sixth day of the illness showed 11,700 per c.mm.—polymorphs, 86 per cent.; lymphocytes, 7 per cent.; hyaline, 3 per cent.; myelocytes, 4 per cent.; and abnormal leucocytes.

Discussion

The aetiology of this case presented great difficulties throughout, and, unfortunately, it will never be discovered whether or no it was a case of leptospiral infection. This man, who spent his days among chickens and the usual mud and filth associated with them, may quite easily have picked up such an infection. He also, strangely enough, had a sore place on his heel about a week before the onset of his illness, but not much importance was attached to this finding at the time or afterwards. A haemolytic streptococcal infection was a possible explanation, but the intense degree of jaundice and the sterile blood culture would hardly fit in with such a diagnosis. The sudden onset of the jaundice rather suggested the sudden flaring-up of a malignant condition in the liver as the result of an acute inflammatory condition inflicting an already damaged organ; post-mortem examination completely negatived this theory. A liver abscess was considered as a possibility until a white cell count was done; this disclosed a leucocytosis, which was not even equal to the degree usually associated with pneumonia.

The feature which struck one above anything else was the intense bronze jaundice; within twenty-four hours of its onset it was of a greater severity than anything I have seen before. I can only conclude by saying that the patient was clearly being poisoned by some extremely toxic process, and that his resistance, as shown by the steady fall in the temperature, was not strong enough to combat it.

CEPHALIC TETANUS OCCURRING IN CIVIL PRACTICE

BY

RALPH SHACKMAN, M.B., B.S.

LATE SENIOR HOUSE-SURGEON, METROPOLITAN HOSPITAL, E.

The infrequency of cephalic tetanus—even amongst war injuries—prompts me to record the following case, together with a few notes on the subject.

The patient, a man aged 71, was seen in the casualty department of the Metropolitan Hospital on February 4th, 1935. He gave a history of having fallen down and cut his right forehead while defaecating in an outside garden lavatory. A laceration was present over the right frontal region, and was 1 inch long and about a 1/4 inch deep. It was treated with a flavine and paraffin dressing. On February 6th the patient was seen in the out-patient department and appeared well. The next day he was again seen in the out-patient department, and still appeared well. On February 9th, five days after the accident, weakness of the right side of the face was noted; it was only slight, the patient being able to whistle. On February 11th, seven days after the injury, a bilateral facial weakness was noted, and the patient was admitted to hospital.

Closer examination during the evening of the same day showed, in addition to the bilateral facial weakness, a degree of stiffness in the muscles of the face: the eyes could not be closed, but if the lids were held down and the patient told to open his eyes, the upper lids moved up weakly. The tongue, when protruded, deviated to the right. The next day (eight days after the injury) a degree of trismus was noted. The jaws were not tightly clenched, but the mouth could not be opened forcibly, and the patient took up an attitude whereby he held his lips apart with his fingers. Nasal breathing was absent, there being a long-standing history of nasal obstruction, so that there was some degree of dyspnoea. The abdominal and the arm and leg reflexes were normal. The wound was suppurating. During the same evening the

trismus increased and the dyspnoea became greater. Attempts were made to introduce a Hewitt's airway between the gums, but, although the patient realized what was intended and tried to co-operate, we failed, because each time the tube was inserted between the lips and came into contact with the edentulous gums the spasms of the jaw muscles increased and the mouth closed. A Mason's gag failed to overcome the muscular spasms. Accordingly, a tracheotomy was performed under local anaesthesia, and afforded considerable relief to the patient, although it took several minutes before he realized there was no further need to hold his lips apart with his fingers. On February 13th, nine days after the injury, his condition was easier, there being no dyspnoea. Slight neck rigidity was noted. The next day the patient sank into coma and rapidly died.

Post-mortem examination, performed by Dr. H. C. Lucey, revealed no macroscopic abnormality in the body, apart from the local condition. The brain appeared normal. The wound on the forehead was suppurating—but to no great degree—and on examination was found to contain several small pieces of black, soft organic material. The wound was excised and cultured anaerobically on blood agar in a M'Intosh and Fildes jar. A mixed culture grew, which contained the typical spore-bearing tetanus bacilli.

The diagnosis of cephalic tetanus was made on February 12th, eight days after the injury, when slight trismus was first noted. Anti-tetanic serum in daily doses of 50,000 units was given intramuscularly. Heroin was also administered repeatedly, but all to no avail.

General Commentary

OTHER INSTANCES

Cases of cephalic tetanus, apart from the general form described in the literature, are rare. It is very interesting, however, to note that the first experimental observations on the pathology of tetanus were made on a case of cephalic tetanus. This work was done by two Italians, Rattone and Carle,[1] in 1884. They had a patient who developed cephalic tetanus after scratching an acne pustule in the region of his chin. A few hours after his death the matter from the diseased area, injected into rabbits, produced the disease which Carle and Rattone regarded as tetanus. During the great war, among the many cases of tetanus occurring in the military hospitals of North London[2] only two cases of cephalic tetanus are described, both with only slight head injuries. In one, following a small head wound, unilateral trismus and weakness of the right frontalis muscle occurred; in the other there was a right facial palsy and right unilateral trismus. In both cases evidence of spread of the toxin was present. In the former spasms of the neck and shoulder muscles, and in the latter general opisthotonos, occurred.

SOURCE OF INFECTION

The organism usually occurs in soil and dust which has become contaminated with the faeces of horses and cattle. It also occurs in human faeces. This was first demonstrated by Pizzini[3] in 1898. Further work has shown that the occurrence of the organism varies in different localities. Tulloch[4] in 1919 found the organism in the faeces of five civilian patients out of thirty-one examined, whereas Fildes[5] in 1925 found the organism in only two out of 200 cases examined. The mode of infection in our case is doubtful, but it is interesting to note that the patient volunteered the statement that he "did not bother to wipe himself properly." Whether or not he infected himself by carrying the organism on his hand is pure surmise. It is probable that when he did cut his head after falling he put his fingers on to the wound to feel what had happened. Of what significance this may be I do not know, but even if it is only mere coincidence it is an interesting theoretical possibility of a method of infection. The alternative, of course, is that the lavatory floor was the source of infection.

SYMPTOMATOLOGY

Cephalic tetanus may present itself in more than one way. Following a head wound, dysphagia and dyspnoea may develop; extrinsic or intrinsic ocular palsies may occur; the hypoglossal nerve may be affected; facial palsy may occur with spasm of the paralysed muscles. A wound on one side of the face may be followed by a unilateral facial palsy or even a unilateral trismus. The particular physical sign which first shows is due to the spread of the toxin along the individual motor nerve. Probably the more distant symptoms are explained by a local diffusion of the toxin either through the synapses in the cord or bulb, or through the cerebro-spinal fluid. Toxin has been recovered from the cerebro-spinal fluid in experimental animals, but this has not been substantiated. The toxin is fixed more in the grey than in the white matter. The rapid spread from the seventh nerve nucleus to the twelfth and the fifth, in our case, suggests a local direct spread through the synapses rather than through the cerebro-spinal fluid. Rapid death, probably due to involvement of the vital centres in the bulb, prevented the general manifestations of tetanus. If the spread was through the cerebro-spinal fluid it is more likely that generalized tetanus would have occurred before death.

In war wounds, experience led to the early recognition of signs and symptoms of tetanus, but in civil practice, when the disease is not anticipated, early premonitory symptoms are likely to be overlooked. Among the premonitory symptoms may be mentioned sleeplessness, dreams, delirium, headaches, giddiness, yawning, an anxious facial expression, and difficulty in micturition due to sphincter spasms. In our case the diagnosis was not made till trismus was present, and by this time, of course, the disease was well established and the toxin had united with the nerve cells. It is probable that if cases of head tetanus were not rapidly fatal the local disease would become general and the condition and diagnosis obvious.

By the time the disease has manifested itself clinically the toxin (*a*) has combined with and damaged the nerve cells, (*b*) is circulating in the blood and lymph stream, and (*c*) is still being elaborated in the wound. The circulating toxin may be neutralized by antitoxin, and the elaboration of the toxin in the wound may be obviated by local excision and the use of hydrogen peroxide. Whether antitoxin given intrathecally can be expected to act on the damaged nerve cells is conjecture, but, following Sherrington's[6] work on experimental animals, daily doses of about 20,000 units should be given into the subarachnoid space.

PROGNOSIS

The prognosis in cases of tetanus is interesting. It seems to depend on the length of the incubation period. If this is less than ten days the outlook is bad. In civil cases in Danish hospitals,[7] 95 per cent. of patients died when the incubation period was under ten days, whereas in England only 35 per cent. died when the incubation period was over ten days.[8] The injection of serum as a prophylactic measure lengthens the incubation period and so improves the prognosis. The outlook in cases of local tetanus is in the main good, but if the disease affects the head the proximity to the higher centres means a short incubation period and diminishes the chances of recovery. In our case the signs first showed on the fifth day, so that, whatever the treatment, the probability was that the patient would have died, and we were not surprised when he did.

In a busy hospital in the metropolis one sees many lacerations of varying degree, but although one is taught to give anti-tetanic serum in all doubtful cases the lesson is soon forgotten. Perhaps this is because the disease is

so seldom seen, and further because cases which would appear to have the propensities for tetanus seldom behave as we would expect. Nevertheless, antitoxin should be given as a prophylactic in all doubtful cases, and it is quite possible that if our case had been so treated a fatality would have been avoided.

My thanks are due to Mr. Acton Davis, under whose care the patient was admitted, for permission to publish this case, and to Dr. Lucey for the post-mortem and pathological findings.

REFERENCES

[1] Carle and Rattone: *Giorn. Acc. Med. Torino*, 1884, 3 s., xxxii, 174.
[2] *Medical History of the War*, i, 162.
[3] Pizzini: *Zentralbl. f. Bakt.*, 1898, Abt. 1, xxiv, 890.
[4] Tulloch: *Journ. of Hyg.*, 1919, xviii, 103.
[5] Fildes: *Brit. Journ. Exper. Path.*, 1925, vi, 62.
[6] Sherrington: *Lancet*, 1917, ii, 964.
[7] Permin: *Mitt. Grenzgeb. Med. Chir.*, 1914, xxvii, 1.
[8] Choyce: *System of Surgery*, i, 858, 863.

Clinical Memoranda

Defective Ossification

The photograph is that of a stunted Indian, with multiple, badly united fractures, the worst malformations being at both ankles: the right foot is completely upturned inwards, lying in front of his loincloth, and the left foot rests on a ledge of his cart.

The case is one of osteogenesis imperfecta, also known as fragilitas ossium. It was formerly called "foetal rickets," a term covering various conditions, which included achondroplasia and cretinism. There are two kinds—pre-natal and post-natal, osteogenesis imperfecta congenita and tarda. In the former the skull is defectively ossified: it is a mosaic of thin broken bones, and there are fractures of the limb bones, which are short and thick. In the post-natal cases the long bones are chiefly affected. Fractures occur more frequently during infancy than in after life, and on slight provocation, without violence or pain, because of the small amount of contusion in the soft tissues. Patients with this kind of deformity are able to lead a fairly normal life, though their bodies are stunted.

Osteogenesis imperfecta can be hereditary. A curiously consistent feature is its association with grey-blue eyes. It is because of lack of fibrous tissue and of lime salts in the connective tissue that the sclerotics become transparent and transmit the colour of the choroidal pigment, resulting in blue eyes. There is, moreover, a lack of fibrosity throughout the general framework of the body. In the bones the lamellae arranged in circular plates round the Haversian canals are lightly bound together by the diminished amount of fibrous tissue, and this, combined with loss of phosphate and carbonate of lime, renders the bones brittle and without spring—bricks without straw. There is no evidence of syphilitic or thyroid gland involvement. Some observers, mostly German, have thought that the posterior lobe of the pituitary gland has an influence on the metabolism of lime salts, and that some calcification takes place directly in the capsules of cartilage cells—metaplasia instead of neoplasia. Metaplasia is the direct transformation of cartilage into bone, and is probably compensatory and not primary in character. The osteoblasts, it is generally agreed, are abnormal, both in structure and in function. Endochondral bone formation being especially restricted, this results in the shortening of stature. This shortening is most marked in intra-uterine cases: in these the fractures are often thought to be due to the bones being warped round by the umbilical cord. But if the warp were strong enough to compress the limbs sufficiently to cause fractures it would mean compression of the cord to the extent of stopping foetal life.

Cases have been reported: of a woman 26 years old, who had thirty-nine fractures; of a young man of 16, who had forty-five fractures; and many others of similar figures. In these days of compensation for accidents it is conceivable that this disease may not be without medico-legal significance. The pathological chemistry may be summed up as progressive loss of calcium and phosphorus. Osteogenesis imperfecta was known to Ambroise Paré, who, in his monumental Latin work, cited instances of it and gave woodcut illustrations.

Edinburgh. G. DOUGLAS GRAY, M.D.

Rupture of Bronchiectatic Abscess: An Unusual Case

The following case of rupture of a bronchiectatic abscess seems to be of sufficient rarity to be worth recording.

The patient, a male aged 36, was admitted to Preston Hall Sanatorium suffering from extensive bilateral pulmonary tuberculosis, with involvement of the spine, the sternum, and the right knee-joint. He had suffered from tuberculosis for fifteen years, and had been bed-ridden for the last three years. His condition was very poor, the breath had a putrid, typically bronchiectatic odour, and he brought up 8 to 10 oz. daily of foul, purulent sputum. There was well-marked clubbing of the fingers and toes. Towards the end of February he developed severe abdominal pain with persistent vomiting of a foul, greenish-looking material. There was definite tenderness over the epigastrium, but no rigidity. Vomiting was, in fact, the main feature of the abdominal condition, and the patient rapidly succumbed.

In this sanatorium routine post-mortem lipiodol bronchograms are taken in each case, and in this patient the presence of gross bronchiectasis was confirmed, but, in addition, it was noted that there appeared to be a quantity of lipiodol in the abdominal cavity. A necropsy was thereupon performed, and a large pulmonary abscess was found at the base of the right lower lobe, having an uneven, necrotic wall, which had perforated through a narrow pin-hole orifice in the diaphragm. A quantity of free pus was found in the abdominal cavity, but no point of entry into any part of the bowel could be traced.

The occurrence of a subphrenic abscess following an empyema, and, similarly, the occurrence of empyema following the rupture of a subphrenic abscess through the diaphragm, are events well recognized in medical and surgical practice. The actual rupture of a bronchiectatic abscess through the diaphragm appears, however, to be something of a rarity, and a preliminary search through the literature on the subject has failed to reveal any case at all on record.

We are indebted to Dr. J. B. McDougall, the medical director of the sanatorium, for permission to publish this case.

J. H. CRAWFORD, M.B., Ch.B.
A. ROSS, M.R.C.S., L.R.C.P.

Preston Hall Sanatorium,
nr. Maidstone, Kent.

Reviews

EXPERIMENTAL RADIOLOGY

The Method of Action of Radium and X-Rays on Living Tissues,[1] by Dr. HECTOR A. COLWELL, was awarded the Garton Prize and Gold Medal of the British Empire Cancer Campaign in 1934. It is not so much a record of original work as a complete summary of all the research work on the subject of experimental radiology from the earliest days up to the present time. A vast amount of information had accumulated, more particularly in recent years. This the author has collated and included with his own work. We agree with him that the subject is not solely one of theoretical and academic interest, but is of great practical importance, especially as regards the radiation therapy of malignant disease. The author holds the view that the action of radiation upon cancerous growths is not purely local, and that the experimental evidence points to a much more widely spread effect.

After a brief introduction, in which the difficulty of the task of investigating the effects of radiation on living tissue is stressed, the difficulty of correlating and co-ordinating the vast wealth of material now available is also referred to. It is not too much to say that the author has been successful in his attempt to do so. The opening chapter deals with the structure of the cell in full detail. Then follows an account of the chemical actions of radiations, particularly with reference to radiations on colloids, though on that subject there is very little exact information. The oxidation and reduction phenomena of radiations are clearly stated, and the subject of enzymes and autolysis is adequately described. A later chapter is devoted to the general effects of radiation on cells. This is an important section of the essay. All the latest research work has been gathered together, and is fully acknowledged by the author. An excellent chapter deals with the reticulo-endothelial system and some immunity reactions, all the latest experimental work on this subject being outlined. The question of radiation and resistance to tumour growth is fully described, and a good account is given of the work by Chambers and Scott. The final chapter treats of the action of radiations upon malignant growths. There is a good index of authors and also of subjects. The illustrations and diagrams are good.

Dr. Colwell is to be congratulated on a book which brings together all the latest experimental work in a concise form. Every radiotherapeutist can derive much information from its study.

NASAL SINUSITIS AND MENTAL DISORDER

Dr. F. A. PICKWORTH has collected and published in the form of a book[2] the results of his researches on the pathological changes in the accessory sinuses of the nose found in cases of mental disorder. This work originated in the discovery of gross evidence of septic infection in the sphenoidal sinus during an investigation initiated by F. W. Mott into the disorders of the pituitary body in patients at a mental institution. The author has published a large number of papers during the last seven years, so that his work is already well known, and in this book he reviews the whole subject from a broad point of view and provides an extensive bibliography. The bibliography itself gives evidence that the literary researches of the author have been as thorough as his pathological work, and also indicates how firm an impression his work has made on the practice of psychiatry, neurology, and rhinology. Perhaps the reader will find the most convincing part of the book in the numerous illustrations of histological preparations and the admirable drawings and paintings of pathological specimens by Mr. Sydney Sewell.

There is in this book a collection of material illustrating this particular branch of cerebral pathology which is likely to remain classical. The text is not very long, but the author has in several places made hard reading by citing so many other authorities, and although his evident anxiety to give acknowledgement where that is due does him credit, he scarcely does justice to his own work by masking it in this way. The effort to present the subject as a whole is nevertheless very successful, and Dr. Pickworth's book will be indispensable to those who are striving to correlate the symptoms of mental disorder with vascular and other cerebral disturbances.

LECTURES ON FEVERS

Professor LEMIERRE's book "Infectious Diseases"[3] is not, as the title implies, a textbook of these affections. It comprises twenty-three clinical lectures on selected cases, most of which were admitted to the Claude-Bernard Hospital, one of the fever hospitals in Paris. About half the lectures deal with various forms of septicaemia, including certain rare instances of bacterial invasion, one of which was of *Bacillus funduliformis*, an organism apparently unknown in this country, at any rate under that name. The others are devoted to tetanus, human rouget or erysipéloïde, the erythema serpens of Morrant Baker (a disease occurring in pigs, of which the bacterial cause is the *Bacillus murisepticus*), undulant fever, amoebic abscess of the lung, Rocky Mountain fever, fièvre boutonneuse (Mediterranean exanthematic fever), typhus, and certain renal complications of the acute infections.

Now it may be said that several of these diseases are rare, at least in Europe, and would therefore not interest medical men who practise in that continent. But one of the reasons for their selection is that some of them were in fact mistaken for other common diseases. Thus the amoebic abscess was at first misdiagnosed as phthisis, and some of the septicaemic cases were sent to hospital as typhoid. Further, discourses such as these afford the opportunity of discussing in detail points of clinical, pathological, aetiological, and therapeutic interest for which room cannot be found in a textbook which treats in a general way of all the acute infectious diseases. Especially valuable from the latter point of view are the lectures devoted to acute nephritis. The author is of the opinion that the majority of these cases are secondary to inflammation of the nasopharynx. He deals at some length with a condition well known to all who have had under their observation many cases of scarlet fever and diphtheria—namely, oliguria and anuria, with or without albuminuria and uraemia, a pathological state for which the French have proposed the term, by no means free from criticism, of "functional nephritis."

In the course of these lectures the author raises more than one interesting and controversial question. Thus he discusses the classification of typhus and typhus-like fevers. This is a matter which is not yet definitely settled, as reference to the current textbooks on tropical diseases will show. Professor Lemierre is evidently for separating the diseases of which the infection is tick-borne (exanthematic fevers) from those in which it is louse- or flea-borne (exanthematic or classical typhus).

[1] *The Method of Action of Radium and X-Rays on Living Tissues.* By Hector A. Colwell, M.B., Ph.D., M.R.C.P., D.P.H. London: H. Milford, Oxford University Press. 1935. (Pp. 164; 34 figures. 15s. net.)

[2] *Chronic Nasal Sinusitis and its Relation to Mental Disorder.* By F. A. Pickworth, B.Sc., M.B., B.S. London: H. K. Lewis and Co. Ltd. 1935. (Pp. 156; 83 figures. 16s. net.)

[3] *Maladies Infectieuses: Leçons Cliniques Professées à l'Hôpital Claude-Bernard.* Paris: Masson et Cie. 1935. (Pp. 408; 23 figures. 60 fr.)

He admits, however, that clinically they resemble one another very closely, and he alludes with some approval to Nicolle's "seductive hypothesis" that the infecting agent of the group was originally pathogenic only for rodents, but that in extending its geographical area it has in the course of time adapted itself to other animals, including man, and developed various strains. In the lectures on the pulmonary complications of the streptococcal septicaemias the author upholds the thesis that in all the bacterial pneumonias, including acute primary lobar pneumonia, but apart from bronchopneumonia, the infecting organism gains an entrance to the lung not through the pulmonary air passages but by the blood, usually from the nasopharyngeal region.

The treatment of the various diseases is discussed in detail and with discrimination. Incidentally the reader learns the methods adopted in a Parisian fever hospital. We note that at the Claude-Bernard Hospital the antisera, except those for meningitis, are apparently in most cases administered subcutaneously. In respect of diagnosis Professor Lemierre, in more than one passage, speaks of the relation of bacteriological to clinical methods, and rightly, in our view, warns his readers against subordinating the latter to the former, whose importance, however, he by no means underestimates. These lectures are highly interesting and instructive, and full of recent information. They provide stimulating reading, especially for those whose opportunities for observation lie among the acute infectious diseases.

ANATOMY FOR DENTAL STUDENTS

The object of the book with this title[4] has been to give the dental student and practitioner as much of human anatomy as is necessary for an L.D.S. examination and for reference after qualifying. In its preparation the editor, Mr. E. P. STIBBE, senior demonstrator of anatomy at the London Hospital Medical College, has had as collaborators eminent anatomists from London, Manchester, and Bristol, and their aim has been to give the maximum that may be of use to the dentist. The book is divided into two parts—systemic anatomy, and practical anatomy. Actual dissection by the dental student is regarded (and rightly so) as limited to the "head and neck" and thorax; and Part I is largely occupied by a detailed description of the structures he will have to dissect by the aid of Part II, which deals with the actual dissection of head, neck, and thorax. The remainder of Part I comprises a short but sufficient account of the central nervous system; a more detailed and very practical account of the abdominal viscera; just a note on the skeletal bones and joints; and finishes with a few pages on general histology, and a short but very informative chapter on the development of the face. In Part II the main features of the thorax and thoracic viscera as seen by dissection are clearly described, and much of the space is given up to a detailed dissection of "head and neck," including a good account of the nose and accessory sinuses and less detailed accounts of ear and eye.

The book is well written and well illustrated, and there is but little to criticize. We note a few printer's errors—for example, on page 139 a reference to the semilunar ganglion should read page 290, and not page 300; the student might ask where the sulcus terminalis of the tongue is to be found, and he would probably like to know where the mandibular attachment of the pterygomandibular raphe is. We think, too, he would appreciate figures showing the cutaneous and mucous membrane distribution of the sensory nerves of the face and mouth, especially, perhaps, of the long buccal nerve. He might also ask whether the work lately published from Manchester on the innervation of the teeth of the mandible has yet passed into current literature. We are sure the book will have a warm welcome, not only from dental students, but also from examiners. It represents the standard of knowledge of anatomy aimed at by men of many years' experience in the teaching of dental students.

[4] *Anatomy for Dental Students, Systemic and Practical.* By Six Teachers. Edited by E. P. Stibbe, F.R.C.S. London: Edward Arnold and Co. 1934. (Pp. 429; 246 figures. 21s. net.)

PERIODIC FERTILITY AND STERILITY IN WOMAN

Having discovered that in the case of the rabbit a characteristic reaction on the part of the uterine muscle provoked by the endocrine action of the corpus luteum was discernible twenty-four hours after ovulation, Professor KNAUS set himself the task of applying this discovery to the human subject. He essayed to fix the time of ovulation in the normal woman with regular menstrual periods by noting the onset of this reaction. He found that, according to this test in women with normal reproductive physiology, ovulation always takes place on the fifteenth day before the onset of the period. If this is so, then since the length of life of the spermatozoa in the female reproductive passages is strictly limited, and since the ovum after extrusion from the ovary remains functionally active for a short time only, it necessarily follows that the "period during which conception can take place consists of the ovulation period plus three days before it and one day after it." Fertilization is impossible during the larger part of the menstrual cycle.

And so the author of this book *Periodic Fertility and Sterility in Woman*[5] is able to give it a subtitle: *A Natural Method of Birth Control.* Manifestly, Professor Knaus's observations can be applied to the case of every woman—that conception can be regulated through temporary abstinence. But it is known that the time of ovulation during the menstrual cycle varies from woman to woman; hence before simple abstinence can be employed as a birth control measure, it becomes necessary to determine for each and every woman the exact time when ovulation occurs. It is also known that the character of the cycle itself may change; and so, because of these complications, and because it is not a simple matter to determine the time of ovulation, it is unlikely that temporary abstinence alone can be regarded as an efficient contraceptive method.

This book is well translated and well produced; it should be studied by all who are interested in reproductive physiology and in birth control.

THE CHILD

The Child,[6] by Dr. FLORENCE SHERBON of the University of Kansas, is an exhaustive work conceived on the grand scale. Before he is left at the schoolroom door the child's origin is traced from the spiral nebula and colloidal dust, through the stages of evolution, to his individual conception, embryonic life, and birth. The author tackles the biochemistry of protoplasm, genes, and gradients as a foundation for her organismic philosophy. "We must live scientifically rather than empirically in order to survive." The child "stands out as a behaving organism integrated within the entire scheme of cosmic organization." The author's physiology is perhaps sounder than her anatomy. Man's assumption of the erect posture

[5] *Periodic Fertility and Sterility in Woman. A Natural Method of Birth Control.* By Professor Hermann Knaus. Authorized English translation by D. H. Kitchin and Kathleen Kitchin, M.Sc., M.B., B.S. Vienna: W. Maudrich. 1934. (Pp. 162; 64 figures, 12 tables. 6 dollars, 6.50 post free; RM. 15, 16.50 post free.)

[6] *The Child. His Origin, Development and Care.* By Florence Brown Sherbon, A.M., M.D. New York and London: McGraw-Hill Book Co., Inc. 1934. (Pp. 707; 147 figures. 21s. net.)

receives a bare mention. Actual error occurs in the description of the inguinal ring (page 94), and the ovaries appear as isolated even from the tubes. Pregnancy is dealt with in a friendly and hopeful tone, and in considerable detail. As to the effect of nicotine, the mother is roundly advised to face the situation. New work by Sontag and Wallace (quoted in our *Epitome* of May 11th), showing that nicotine increases the foetal heart rate, supports these warnings. Two-thirds of the book deal practically with the nurture of the child. Elaborate tables are given of food values, vitamins, etc. Behaviour is traced to the gradients of chemical and electrical force, but due emphasis is placed on environmental influence. Training and progress, viewed throughout as cause and specific effect, are well described and illustrated. Interesting quotations of verse, and homely well-written summaries of sections, add to the readability of this comprehensive work, while bibliographies and a glossary add to its usefulness. Its appeal will be to the inquiring and studious parent, such as "the present-day college-trained mother, who is the highest expression of maternal efficiency yet achieved."

Notes on Books

The second edition of Dr. JAMES MENNELL'S book on *Backache*[7] is larger than its predecessor by some thirty pages, and eleven more illustrations have been included. The increase in size is accounted for by the addition of new matter to bring the information fully up to date and to render the explanations more lucid. As anticipated in these columns four years ago, the first edition found a large public, who welcomed a succinct account of the diverse aetiology of this common yet often misunderstood condition and a practical exposition of the treatment required in different cases. The author has done good work for scientific medicine by defining the rational basis of a condition which too often in the past has been treated on unsuccessful because irrational lines. The technique of treatment is described so clearly that there may be some risk of the less experienced entering upon it light-heartedly, but the emphasis laid on accurate diagnosis ought to be a sufficient safeguard. For the general practitioner the book provides a handy guide, which stimulates while it instructs. Such important topics as posture and the possible physical factors in psychological manifestations are discussed carefully.

Three books on the subject of case-taking and examination of the patient may be briefly noticed together. They come from widely different centres: the first, *L'Examen du Malade*,[8] is written by nine professors of the medical faculty of Montpellier, and describes the examinations, suited for students and practitioners, of patients with medical, surgical, obstetrical, gynaecological, neurological, and other ailments included under the various special departments. It contains a chapter on the important subject of how to obtain and send to the pathological laboratory material for examination. This is the most comprehensive of the works now under consideration. Professor GEORGE HERRMANN[9] of the University of Texas, Galveston, provides hints, supplementary to a work on "Methods in Medicine," on how to obtain case histories. The work was printed in the United States of North America and handled in Europe by Kimpton. Dr. KOHIYAR,[10] physician to the J. J. Hospital, Bombay, and sometime professor of biology in the Grant Medical College, has collected together articles published in *The Medical Bulletin* and intended for students and general practitioners, who have, it appears, made a great demand for this course.

The second volume of the supplement of *Thorpe's Dictionary of Applied Chemistry*[11] deals with the second half of the alphabet. The work will be completed by a small volume containing an index and glossary. The contents of volume ii provide evidence of the importance of the advances in biochemistry made during the past eight years, and there are numerous articles on subjects of medical interest such as protein degradation products, proteins, starch, synthetic drugs, the estimation of sugar in the blood, the bacteriology of water and vitamins. The last-mentioned article is by Dr. L. J. Harris, and provides a short but very clear account of the state of modern knowledge regarding the chemical constitution of the vitamins. The article on the bacteriology of water was written by the late Sir Alexander Houston, and gives an authoritative summary of this important subject. There are a number of other articles on subjects of outstanding general interest such, for example, as the utilization of atmospheric nitrogen, the production of oil and petrol from coal, heavy water, etc. Perusal of the volume will impress the reader with the complexity of modern applied chemistry and the enormous importance of this subject to modern civilization.

The Standard Classified Nomenclature of Disease,[12] compiled by the National Conference on Nomenclature of Disease, of which Dr. Haven Emerson is president, Professor Henry Christian of the Peter Bent Brigham Hospital, Boston, vice-president, and Dr. E. H. L. Corwin, secretary, first appeared in 1933, and has rapidly gone into another edition, both being edited by Dr. H. B. Logie. The present edition numbers some hundred and seventy pages more than its predecessor, and many changes have been made. A nomenclature of disease is very different from a list of the causes of death. This closely printed nomenclature aims at the inclusion of every morbid condition that can be recognized clinically, and there are more than nine thousand diagnostic and symptomatic titles in the text. The scheme and recommendations of the first edition met with wide approval in the United States and Canada, thus rewarding the executive committee and the editor for their labours, which have certainly been far from light.

For the fourteenth year in succession Dr. CAMILLE LIAN has edited the Practical Medical Annual,[13] the French equivalent of the publication of a similar name in this country. Each year has seen steady improvement not only in the quality of the monographs but also in the range of the periodicals annotated, and while it is still a fair criticism that the contents of this book are too much based on a national outlook, there are numerous indications of a wider reading on the part of the contributors. Among the rarer conditions mentioned are the occurrence of tetany during pregnancy, and the transmission of malaria by blood transfusion. There is an interesting short section on pain in its relation to forensic medicine, and as usual the articles dealing with tropical disorders are of a high standard.

In *Round Mystery Mountain: A Ski Adventure*[14] is described the east to west crossing of the little-known coast range of British Columbia in 1934. Accompanied by Wing Commander Beauman, Sir Norman Watson, and Camille Couttet, the guide, achieved "Fury Gap," a 2,000-foot col at the foot of Mount Waddington ("Mystery

[7] *Backache*. By James Mennell, M.A., M.D., B.C.Cantab. Second edition. Illustrated by Margaret Morris. London: J. and A. Churchill, Ltd. 1935. (Pp. 227; 59 figures. 10s. 6d.)
[8] *L'Examen du Malade*. Par MM. P. Delmas, G. Giraud, etc. Paris: Masson et Cie. 1935. (Pp. 318. 30 fr.)
[9] *Clinical Case Taking: Supplement to Methods in Medicine*. By George Herrmann, M.D., Ph.D. London: Henry Kimpton. 1934. (Pp. 98. 6s. 6d. net.)
[10] *Medical Case-Taking and Diagnosis*. By A. J. Kohiyar, M.D., M.R.C.P. Bombay: The Medical Bulletin. 1935. (Pp. 133. 3 rupees.)
[11] London: Longmans, Green and Co. 1935. (Pp. 728. 60s. net.)
[12] Compiled by the National Conference on Nomenclature of Disease. Edited by H. B. Logie, M.D., C.M. New York: The Commonwealth Fund; London: H. K. Lewis and Co. Ltd. (Pp. 870. 15s.)
[13] *L'Année Médicale Pratique*. Published under the direction of Dr. Camille Lian. Fourteenth year. Paris: René Lepine. 1935. (Pp. 719; 29 figures. 26 fr.)
[14] *Round Mystery Mountain. A Ski Adventure*. By Sir Norman Watson, Bt., and E. J. King, M.C. Foreword by F. S. Smythe. London: Ed. Arnold and Co. 1935. (Pp. 246; 35 illustrations. 15s. net.)

Mountain "), and thence made their thirty-mile dash on skis to the Pacific Ocean. This book gives a vivid account of what must have proved a more than interesting expedition. The country is described as a wild and mysterious region, with gigantic granite peaks, vast glaciers, and snow-fields rising from a tangled wilderness of primeval forests and canyons, peopled as yet only by eagles, wolves, and bears.

Mr. H. A. REASON, in a pleasantly written book which he calls *The Road to Modern Science*,[15] gives an account of the milestones on the highway leading from the Stone Age to the work of Lord Rutherford and Professor Einstein. The book evidently took its origin in lectures to school children, for it is written in simple language such as they could understand. It is, however, suited for adults who have only the usual amount of knowledge of the way in which our present position has been reached. It deals chiefly with astronomy, physics, and chemistry, but biology is not forgotten. The numerous illustrations are well rendered and informative, the summaries are satisfactory, and there is an excellent index.

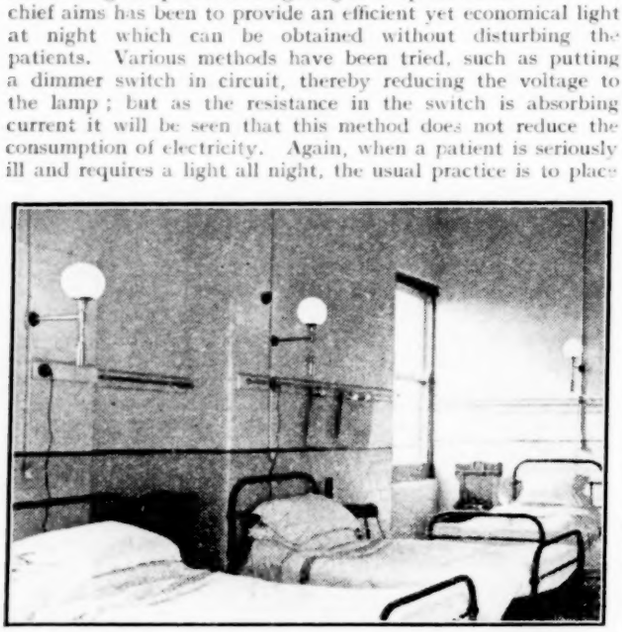
The twenty-seventh issue of the *Stock Exchanges Ten-Year Record of Prices and Dividends*, showing relative prices where par values have been altered, is published by F. C. Mathieson and Sons (16, Copthall Avenue, E.C.2) at the price of £1.

[15] *The Road to Modern Science*. By H. A. Reason, B.Sc. London: G. Bell and Sons, Ltd. 1935. (Pp. 306; 43 figures, 24 plates. 6s net.)

Preparations and Appliances

LIGHTING OF HOSPITAL WARDS

In tackling the problem of lighting in hospital wards one of the chief aims has been to provide an efficient yet economical light at night which can be obtained without disturbing the patients. Various methods have been tried, such as putting a dimmer switch in circuit, thereby reducing the voltage to the lamp; but as the resistance in the switch is absorbing current it will be seen that this method does not reduce the consumption of electricity. Again, when a patient is seriously ill and requires a light all night, the usual practice is to place



a screen round the bed and hang over this screen a portable hand-inspection lamp with a long flexible lead that is plugged into a wall socket. This long flexible lead is a source of danger to the night nurse, who may trip over it in the dark. This light is often too brilliant for the rest of the ward, so that various means of dimming it are used, but in every case there is a full consumption of electricity.

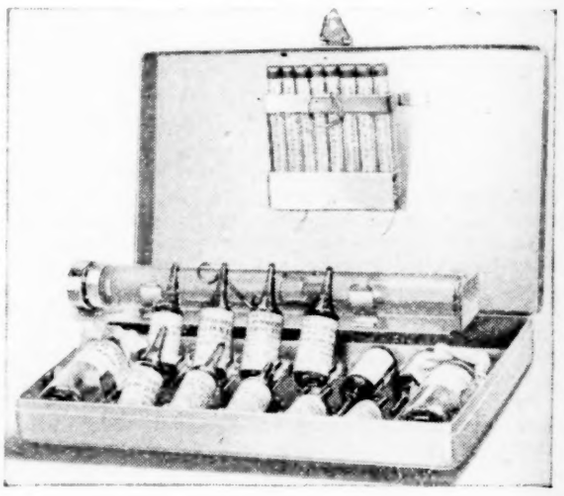
These difficulties have been overcome by the engineer of the Queen's Hospital, Birmingham, who has installed a special bracket that has been acclaimed very highly by the medical staff. It consists of a general light for the illumination of the ward and a small 15-watt pigmy light for night or inspection purposes. The direction of the beam of this small lamp is adjusted by a reinforced metal flexible arm that is attached to the bracket. The arm will bend in any position up to a right angle, and will remain *in situ*.

The numerous uses to which this bracket light can be put will readily be appreciated. For ophthalmic and ear, nose, and throat work the beam of light can be directed on to the surgeon's head mirror, and will remain in any fixed position, thus displacing an assistant holding a torch. The arm can be used for any type of inspection purposes, and also for laboratory work. In nursing the advantages of this type of lamp are very wide; it displaces the long trailing flex used on hand lamps, and the small beam of light can be made to fall on any portion of the patient or the bed without disturbing any of the adjacent patients.

We understand that Mr. C. E. Forryan of 65, St. Mary Street, Edgbaston, Birmingham, 16, will give further information to any reader who is interested.

A NEW HYPODERMIC POCKET CASE

"Hypoloid" brand hypodermic pocket case No. 65 forms a valuable addition to the list of pocket hypodermic outfits issued by Burroughs Wellcome and Co. (Snow Hill Buildings, E.C.1). It has the usual merits of cases issued by this firm, and will be found convenient to carry and serviceable in



ordinary routine or in emergencies. The case measures 5½ by 3¾ by 1 in., contains an "agla" three-piece syringe in spirit-tight container (min. 20/1 c.cm.), an "agla" needle, one empty glass-stoppered bottle for ethyl alcohol, a similar bottle for distilled water, eleven "hypoloid" products, and eight tubes of "tabloid" hypodermic products. These hypodermic preparations may be varied according to the requirements of the medical man. The case is of nickel-plated metal, and the price to the medical profession is 39s.

FAREX CEREAL FOOD

The Glaxo Laboratories have prepared for medical practitioners a booklet describing their comprehensive proprietary food "farex," which is not advertised to the general public. This preparation is stated to be in general accordance with the special cereal described by Brown and Tisdall (*British Medical Journal*, 1933, i, 57), but differs from it in including a sufficient supplement of vitamin D to ensure normal calcium-phosphorus metabolism, and in needing no cooking or special preparation. It is claimed that, with the exception of vitamin C, this food ensures a desirable physiological balance and quantity of all the food components required for maintaining health, growth, and development. In gastric ulcer "farex" is recommended as supplying a diet of high calorific value which will combat debility without straining digestion or including any appreciable amount of roughage. It is also recommended for infants, with the addition of vitamin C in orange or tomato juice, and for invalids and convalescents generally. The booklet gives details of the "farex" content of carbohydrates, fats, proteins, and essential mineral elements, as compared with rolled oats and wheat flour. Vitamin D is included in the form of crystalline calciferol. The food is a mixture of wheat flour, wheat germ, oatmeal, corn meal, edible bone meal, dried brewer's yeast, and a concentrate of vitamins and minerals. Copies of the booklet and samples of the food may be obtained from the Glaxo Laboratories, 56, Osnaburgh Street, N.W.1.

NOISE ABATEMENT

CONFERENCE AT SOUTH KENSINGTON

The last of the conferences organized by the Anti-Noise League in connexion with the Noise Abatement Exhibition at South Kensington was held on June 28th, when Mr. H. G. WELLS presided and Lord HORDER, chairman of the League, gave a brief address on noise in relation to health.

A WORLD WITHOUT NOISE

Mr. H. G. WELLS began as the devil's advocate. There was a great deal to be said for noise. If he had to choose between a silent world and the world as it was to-day he would, reluctantly, choose the latter. A world without noise would be almost as bad as a world without light. He avowed that he could not work in absolute silence. He liked an undercurrent of noise, and if he could not hear a distant piano or the subdued sounds from the street he was under-stimulated. He felt also that human beings liked making noises. It was a form of self-assertion. Life always had been noisy. Nature was noisy. Noises in towns, even in Southern Europe, were not to be compared with the dreadful noises which pursued one in the country. No one who had not heard it could imagine how exasperating the nightingale could be when heard all night long, succeeded at dawn by the twitterings of other birds. It seemed to Mr. Wells that what was wanted was not to banish noise, but to control it. Humanity was passing from the hugger-mugger of too close association in cave, camp, and kraal, and individualities tended to get apart. It had not dawned upon him until recently that he wanted to hear himself think. One was always, at an inaudible level, saying things over to oneself, and the invasion of unnecessary extraneous noise was thus becoming a more and more serious interference with the privacy of individual life. Just as people were able to detach themselves from others visually, so they ought to be able to achieve an auditory isolation ; yet the tenant of a flat lived, so far as hearing was concerned, surrounded by the equivalent of glass walls, ceiling, and floor. It seemed to him that some method of sound-proofing our lives was needed so as to get away from the clamour of existence, which had always been there, but which, owing to the greater intensity of life nowadays, was felt more oppressively.

NOISE AND HEALTH

Lord HORDER hastened to reassure Mr. Wells. The Anti-Noise League was not out for a silent world ; had that been its object it would never have had his support. In speaking of noise in relation to health he did not propose to deal with some of the more obvious associations, such as the loss of sleep or the disturbance of deep sleep occasioned by noise, but to touch on rather more basic considerations. He himself was a pragmatist ; no system of philosophy made much appeal to him if it was divorced from practical consequences. Our senses were our most valuable servants. Nature protected most of them instinctively. If light were too sudden or glaring the rapid action of the eyelid saved the delicate curtain of the retina from harm. If a crash occurred in our vicinity we shrank, and so reduced as far as possible the field of damage to the skin. But the human ear could not be closed by any reflex mechanism, for Nature had never dreamed that we could produce machines so vast and powerful without taking the precaution to control the noise they made. Not even science must be allowed to usurp the reason. The physician fought nowadays, Lord Horder went on, not so much against fulminating disease as against disease that was insidious. The grosser forms of occupational and industrial disease had been eliminated, and he struggled now against more subtle disorders, not rapidly lethal, but calculated to undermine resistance in a gradual and debilitating way. We had new diseases for old. In place of acute maladies there had been a large increase of diseases due to maladjustment of the internal organs, troubles with the thyroid, metabolic dysfunction, psychological abnormalities. We had become hypersensitive to common forms of food and to particles inhaled from the air. Our bodies could not even live in peace with horses and cats. The nervous factor in all these conditions was universally conceded. Those who studied microbic infections declared that we were becoming victims not so much of devils from without as of our own familiar spirits. Close observation went to show that the factor of general tone, especially of nervous tone, was what was lacking. Serums and vaccines were of little or no use in treating this form of poisoning. What was necessary was to brace the nervous tissue and restore the squandered force. But how much better to deal with the cause that had led to the disablement—in other words, to encourage preventive rather than curative medicine. It was not pretended that noise constituted the only disturbance to nerve integrity, on which so much of health depended, but this was a particular problem which had to be tackled, and the League was out to show people how they might escape from the hammer-blows of needless noise on the vital tissue called " the nerves." These blows helped to engender fear, a sense of incapacity when faced with forces beyond control. Fear was the last enemy that had to be destroyed. " We meant to explore the hygienic value of a quiet mind, because we have very little hope that we can save civilization without it."

DISCUSSION

After a lively but rather irrelevant discussion, Mr. WELLS, in summing up, expressed a doubt as to whether life was more exacting than in bygone times. The trouble was that people tried to get much more out of life than they had ever attempted before. Men of 60 or 70 nowadays were trying to play the part which men of 30 or 40 played in the past. In days gone by the world was younger in the sense that the people who were trying to do things were, on the whole, younger and fresher people, less affected by noise and such distractions. Mr. Wells also pointed out that a loud noise might not be of such a nature as to distress the mind, while a minor noise, like the whine of a puppy or the whimpering of a child, might make the mind acutely conscious. Nor must it be supposed that natural noises were pleasing and artificial noises unpleasing. The wind or the noise of waves on a pebble beach might be intolerable. The question of motor horns had been raised. The problem of the car was not going to be solved by the use of inaudible horns, but he would like a car with a series of horns, from the very gentlest of sounds to warn the timid pedestrian to the most raucous note—a horror of a horn—for the benefit of the driver of a lorry who held the crown of the road. His impression was that nursing homes and hospitals were very badly arranged from the point of view of noise elimination.

Lord HORDER agreed that there was a great deal of difference in individual susceptibility to noise, but there was a consensus of opinion that civilized man was more noise-sensitive than uncivilized man, and the child much less sensitive than the adult. He expressed himself strongly against a suggestion put forward in the discussion that some means of muting noisy children should be found. Somehow the mind tolerated noise made by the child and refused to tolerate the same noise made by an adult, recognizing that in the latter case it was needless, provocative, hurtful—in other words, a breach of good manners.

A series of visits abroad has been arranged for this summer by the Le Play Society. One party is to go to Bulgaria, where, under the leadership of Dr. Herman Finer, an economic and social survey will be made. Miss Margaret Tatton will act as hostess. Professor Stoyanoff of the University of Sofia will lead the botany expeditions. Another group is going to the Caucasus, under the direction of Dr. L. Dudley Stamp. Other study groups are making up for Denmark and Sweden, where housing and other social problems will be the special subject for the members ; and in Andorra an economic and geographical survey is planned. Arrangements for the latter party include some camping facilities. Full details can be obtained from Miss M. Tatton, director, the Le Play Society, 58, Gordon Square, W.C.1.

British Medical Journal

SATURDAY, JULY 6th, 1935

PREVENTIVE INOCULATION

A report appeared in the *Supplement* of this *Journal* on June 22nd which may have escaped the notice of some readers. It is a document of outstanding value, and many would do well to read it and preserve it for reference. It is the report of a committee set up last year with the original purpose of considering the measures advisable for securing small-pox prevention, but thereupon entrusted with the more comprehensive task of considering methods of immunization in general, and "the desirability of preparing a practical scheme for informing the public" about them. The committee has apparently taken the view that it is not the duty of the British Medical Association to conduct a public campaign in favour of preventive inoculation, but it lays great emphasis on the power of the individual practitioner to influence public opinion in this direction: its report, which is intended for his guidance, is a comprehensive statement of what can be done by way of preventing five infectious diseases which are most clearly amenable to this form of control. This statement is full, fair, and wholly orthodox; there is not a sentence in it which is open to question, and anyone relying on it as his authority and basing practice on its recommendations will be in an unassailable position. The information which it contains is available nowhere else in the same condensed and practical form.

The necessity for such a statement as this merits some consideration. Immunology is not a subject to which a generous allowance of time has been given in the medical curriculum. In any case methods of immunization have been developed within recent years about which only the younger generation has received any instruction at all. This is not to say that modern methods are not largely employed, but to give injections according to instructions in a leaflet is one thing, to understand the underlying theory and to be capable of quoting facts in proof of the efficacy of these injections is quite another. To be in a position to refute the arguments of the multitude of conscientious objectors and anti-vivisectionists, who have their representatives in every practice and constitute a force which at present is a complete bar to anything like universal immunization in this country, demands a sound knowledge of the principles of immunology and of its main achievements. It is undoubtedly true that the future of preventive inoculation is largely in the hands of the general practitioner: his advocacy can enormously extend its scope. A large section of the public is ready; in fact, the enormous increase in immunization against diphtheria last winter was due almost entirely to public demand rather than to recommendation by the profession.

The conclusions of the report as they concern individual diseases may be briefly reviewed. The case for universal immunization against diphtheria is overwhelming: this disease is almost unique in that susceptibility to it can be determined by a simple test; "active immunization may be confidently advocated as a safe and efficient method of prevention." Scarlet fever is on a similar footing, but owing to the increasingly mild form of the disease now prevalent it is considered worth while to immunize only those specially exposed to infection, such as hospital staffs or children in a school in which an epidemic occurs. Enteric fever also represents so remote a risk that general immunization is not called for, although special circumstances may demand it. The problem of small-pox receives extended and obviously anxious consideration. Public prejudice and the lamentable effect on opinion of variola minor and the measures necessarily taken in dealing with it have caused a steady diminution in infant vaccination, and exemptions (47.5 per cent. of births) now exceed vaccinations (38.2 per cent.), while revaccination is almost entirely neglected. Only the watchful eyes of a few port medical officers stand between this country and what might be a devastating epidemic, one at least which, if it were to be localized, would demand measures completely dislocating the ordinary life of the area involved. The committee thinks that the time has come to repeal the Vaccination Acts, not because they bid fair to become a dead letter, but because they foster antagonism to vaccination and "hinder acceptance of other forms of immunization." On the other hand, it is imperative that the Minister of Health should have power to impose compulsory vaccination (presumably without possibility of exemption), either locally or even generally, in the event of an outbreak. This is a grave matter, and obviously one for which the responsibility must rest in Whitehall. The fifth disease treated of in the report is measles, and it is not perhaps made clear enough that this differs radically from the rest in that no method of active and hence permanent immunization is known. On the other hand, convalescent human serum can be used either completely to protect against it for the time being or to reduce its severity. The conditions necessary for securing these results should be universally known. The weakness of any recommendations in this direction is that such serum is not generally available: either commercial houses or public health authorities may reasonably be expected to remedy this defect in the near future. Finally, we may perhaps mention methods which find no place in this report. Its scope has been restricted to subjects which in so far as results are concerned are long past controversy; but these are not the only diseases in which specific prevention is possible. Excluding such infections as rabies and yellow fever, which scarcely concern the population of this country, there remain whooping-cough, which many believe to be preventable by means

of a vaccine ; poliomyelitis, which at least deserves such benefit as convalescent serum can afford ; and the difficult question of the prophylaxis of tuberculosis by means of " B.C.G." These cannot be the subjects of assured pronouncements, but it is to be hoped that in utilizing the certain measures now at our disposal we may not forget to study those about which better information has still to be obtained. The only criticism which this report appears to deserve is that it does not envisage any extension of the scope of preventive inoculation or suggest directions in which further study in the clinical field is to be desired.

THE PREVENTION OF TUBERCULOSIS IN CHILDHOOD

The heritage of health for the child is a matter of supreme importance for this country to-day, and not the least important part of that inheritance is a world in which life is safeguarded against permanent crippling and early death from tuberculosis. Considerations of the health of infants and young children make a special appeal to every man and woman. Several factors probably contribute to this impression: the child's physical defencelessness, his inability to co-operate in diagnosis or treatment, and the fact that his upbringing is often in the hands of those whose information in matters pertaining to health suffers from ignorance or popular prejudice. Moreover, in his early years is undoubtedly laid the foundation of the child's future life and his relation to society and the State. It was therefore a happy inspiration which led the organizers of the twenty-first Annual Conference of the National Association for the Prevention of Tuberculosis to choose as the title for their discussions " The Responsibility of the Nation towards the Child in Respect of Tuberculosis."

Study of the papers read at the Conference (and reported elsewhere in this issue) in the light of the special discussion on the prevention of tuberculosis at the Royal Society of Medicine in April, and the recent correspondence in our columns on the examination of tuberculosis contacts, emphasizes, however, once more the wide differences of opinion that exist in regard to the problem. There appears a vagueness of outline and lack of co-ordination in thought which, however justified in view of our incomplete knowledge, must inevitably hinder the organization and operation of any new measure of prevention. Several reasons may account for this. Much of the clinical and epidemiological research in tuberculosis of children has been carried out abroad, and there is a natural disinclination to apply the findings to this country. The decreasing mortality has given rise to a feeling of satisfaction which tends to ignore the considerable numbers still suffering and dying from the disease, and the lesson to be learnt from the broad epidemiological variations of other diseases. Finally, the administrator finds it difficult to see eye to eye with the clinician, owing to the " worth-while " principle which he must always keep before him: will the effort expended be rewarded by the results obtained?—a question the answer to which unfortunately depends on the standards employed. For the same reason he will seek a method that can be applied universally rather than a scheme that involves the consideration of several methods in each individual case. It is clear that certain fundamental facts in causation must be used as guide to the measures for prevention. Tuberculosis in children is due to the ingestion of the bovine bacillus in milk or to the ingestion or inhalation of the human bacillus as the result of contact with cases of pulmonary tuberculosis. The investigations of Blacklock, Stanley Griffith, and others have shown that in Great Britain about 75 per cent. of childhood tuberculosis is due to the human bacillus. Bovine sources are receiving much attention in this country, and have been amply discussed in this *Journal*. Human contact occurs in the home or outside it (chance infection). Mass investigations of all children with the tuberculin test and radiology to detect lesions the result of chance infection may perhaps be practicable in England, and would certainly be of great interest ; but, as F. J. Bentley has pointed out, they may not repay the effort and expense involved. The much greater incidence of tuberculosis infection and mortality in home contacts points, however, to where such examinations should prove fruitful. Dr. Ernest Ward and the correspondents who insisted that extensive examinations of child contacts are hardly worth while deal, perhaps, with unconsciously picked children. Those who succumb do so only a few weeks after infection, as Wallgren has recently shown, either incorrectly diagnosed at home, or in general or in children's hospitals. Since knowledge of the factors influencing the subsequent course of tuberculosis once infection has taken place is inadequate, the work following discovery of the latter is at present inevitably carried on somewhat blindly. It is, however, definitely known that the younger the child the graver the prognosis of infection ; hence prevention of infection for as long as possible must clearly be our aim.

It appears from the discussions referred to above that no single method of prevention will solve the problem to-day, and that the partisans of each method tend almost to discredit it by endeavouring to make it self-sufficient. This reasoning applies, using Dr. Lissant Cox's terminology, to " isolation " (of adult patients) ; to " immunization " (by means of B.C.G.) ; to " environment " (placing the family under ideal conditions of living, as, for instance, in village settlements) ; and, adding a fourth, to " separation " (by removal of the child from home). A view of the forest rather than of the trees indicates that all four methods are useful, and that the choice of one or more must depend not only on the economic and general public health development of the country but also on the home conditions of each family. All will agree with Dr. Lissant Cox and Dr. Ernest Ward on the importance of the discovery and isolation of the adult con-

sumptive, but can this always be effectively carried out to its logical conclusion? Village settlements perform an excellent function, but can they hope to solve the problem for more than a minute proportion of tuberculous families? B.C.G. is innocuous and will produce a partial immunity for some months, but are we justified in sharing Dr. Rist's enthusiasm? He quotes at length Wallgren's results in Gothenburg, but the figures he gives do not indicate that "B.C.G. is really able to protect previously uninfected children against virulent infection," but that B.C.G.—to which is *added* "separation" and "isolation"—will protect them against manifest tuberculosis. Finally, a critical examination of the Œuvre Grancher and allied organizations in France shows that removal of a child from the home should and need only be applied to a limited number of home contacts for periods which are not long enough to interfere seriously with family ties. And indeed it is on this principle that the method is being carried out in London, by no means unsuccessfully, under the London County Council's scheme for contacts. A little tolerance of the ideas of others, leading to the administration of the ingredients "isolation, immunization, separation, and environment" in doses prescribed to the needs of the individual child, should result in a diminution of the tragic loss of life and the crippling still caused by tuberculosis in childhood.

TESTS FOR MYOCARDIAL EFFICIENCY

The desire to describe results mathematically is a very natural one to modern man, and is a very desirable one scientifically. The chief impediment to it in the estimation of the function of various bodily organs depends on two facts: tests of functional efficiency are as a rule only applicable when the function of an organ is failing severely; the reserve capacity of most organs is many times that required for the resting state. In the case of the heart these limitations hold true, and there are also certain other reasons why tests of functional efficiency, though repeatedly devised, have generally fallen into disuse. A failing heart in its early stages gives rise to dyspnoea at a level of work which is less than that normally performed. Thus the simplest way of elucidating the degree of failure is by inquiry into the amount of work that can be done without undue fatigue. The dyspnoea itself is the result of the volatile and non-volatile acidosis, which can be measured as regards the latter factor in terms of the blood lactic acid. But the dyspnoea itself is a finer indicator of the acidosis than any chemical one, and is more easily observed. Again, when congestive failure becomes more gross the venous pressure rises. This can be measured by various mechanical means, the simplest being the insertion of a trocar into a vein and the reading of the result in an attached manometer held at the heart level. It is, however, simpler, and as accurate for practical purposes, to observe the level in the veins of the neck up to which filling persists. This should correspond, whatever the position of the patient, to the lower border of the manubrium sterni. The venous pressure can thus be read off visually. Various tests of myocardial function dependent on a more mathematical basis have been elaborated in the past by Kahn, Lelig, Wilson, Brittingham and White, Barringer, and others; and these were generally devised so that the result was read off by taking account of the changes in pulse rate and blood pressure which followed a measured amount of exercise, and by noting the time taken for such increases in rate or pressure to return to normal. Criticism has generally been directed against these tests on the ground that they are composed of muscular efforts unlike those performed normally by the body. Continued hopping, flexing of the trunk, knee-bending, and dumb-bell swinging are all open to this objection. Further serious deficiencies in the reports of work of this type are that a sufficiently large number of control normal figures are not generally available, and that allowance for variations in sex, age, and bodily weight is not usually made. Masters,[1] in a recent communication, describes a simple method of measuring the results of exercise on the heart which appears to be free from these defects. It has also the merit of simplicity. The apparatus required consists of two steps, each nine inches high; thus one "climb" is equal to eighteen inches. The author has worked out by experiment the number of such "climbs" healthy individuals of various ages and weights should normally perform in a standard period of one and a half minutes. His criterion as to the normal result is that on completion of the exercise, and after a subsequent resting period of two minutes, the pulse and blood pressure figures should return to, or be within ten points of, those figures previously obtained from the resting patient. He gives full tables from which it is simple to calculate the results and to compare them with figures taken from normal individuals of the same weight and age. He further claims that, by finding experimentally the number of climbs which will just not produce an abnormal result, it is possible to express mathematically the percentage value, relative to normal, of the patient's myocardial reserve. Examples are given from cases of healed coronary thrombosis, where careful investigation by the method enabled a good or a bad prognosis to be made with accuracy. Very few methods of this kind produce in other hands the full results claimed for them by their authors, but many of them are useful, even valuable, in their application to certain clinical points. Their value generally is found to be proportional to their simplicity, and to the care with which they are employed. Dr. Masters's method would appear well worthy of a full trial. Its chief application will probably be found to be in the more chronic types of left ventricular disease.

THE EARLY ANAEMIA OF PREMATURE INFANTS

Dr. Helen Mackay has shown that an anaemic baby is more susceptible to infection than the normal infant. One of the dangers to life of the premature baby is certainly infection, and it is well recognized that the fall in haemoglobin level in the premature baby in the early months of life is one of the factors in the production of anaemia in such subjects. Dr. Mackay's latest work, published in the current issue of the *Archives of Disease in Childhood*,[2] consists of an in-

[1] *Amer. Heart. Journ.*, April, 1935.
[2] June, 1935, p. 195.

vestigation of this problem. The research was carried out at the Mothers' Hospital, and the 150 babies who formed the object of the work were either newly born in-patients or were attending the hospital welfare centre. The determination of haemoglobin was carried out during the first twenty-six weeks of life of babies of low birth weight. The first set of investigations was planned to observe the effect of intramuscular blood injections. Babies were given on the first, second, or third day of life an intramuscular injection of 15 c.cm. of human blood with 1 c.cm. of 1 per cent. citrate solution, the blood usually being taken from the mother, but occasionally from the father. Haemoglobin estimations were made on the first and eighth days of life, and subsequently in the fourth, sixth, tenth, fourteenth, eighteenth, twenty-second, and twenty-sixth weeks whenever possible. The lowest average haemoglobin value was reached in each weight group in the tenth or fourteenth week. Taking all the cases together the difference between the injected cases and a control group in the haemoglobin level was less than 1 per cent., so that there was no effect of blood as used in this investigation upon the drop in haemoglobin. An unexpected finding, however, was that there was little difference between the lowest level reached by the bigger babies and the smaller babies. In face of this surprising result it seemed necessary to make sure that iron administration was playing no part in minimizing the haemoglobin drop in the smaller babies, since most of the babies in attendance at the welfare clinic were given iron before 1½ months old. Careful study of this point ruled out iron prophylaxis as playing any part in this connexion. Investigating in particular those babies showing any pathological conditions, Dr. Mackay concludes that where progress and health have been satisfactory premature and immature babies do not show any severe anaemia during the first three months of life. While the mechanism which brings about an excessive fall in haemoglobin in the early months remains unexplained, it seems possible that there are some factors or factor associated with general health which bring about the very low haemoglobin levels in premature babies in the first three months.

CONTROL OF CORONERS

The London County Council is recommended by its Public Control Committee to give evidence before the Departmental Committee on Coroners to the effect that there should be vested in the appointing council—the L.C.C. in the London county area—some measure of control of coroners regarding times and days on which they shall hold inquests ; also that the appointing council shall have power to determine the places at which inquests are held, and to appoint deputy and assistant deputy coroners. The L.C.C. makes a practice of appointing as coroners only persons possessing both a medical and a legal qualification ; candidates have to be between the ages of 35 and 50 ; the appointments are on a whole-time basis, and the salary is £1,700 a year, out of which coroners are required to provide for any clerical expenses and the payment of a deputy. At present there are fifteen coroners' courts in the county. Apart from the payment of salaries, pensions, and disbursements, there appears to be nothing in law to give the appointing council any control over the manner in which coroners' proceedings are conducted or power to remove them from office. A coroner is at liberty to decide at which court within his district he will sit, and it may happen that although a court is provided at the public expense and the local authority may consider it desirable in the public interest that the court should be utilized for the holding of inquests, the coroner may refuse to make use of the court, not on the ground that it is unsuitable for the purpose, but for reasons which he is not even bound to disclose. It is felt that only considerations of public interest should decide such an issue, which should properly be determined not by the coroner but by the council which appoints him. It has also been represented that the concentration of inquests on a limited number of days in a week, involving the holding of numerous inquests on the same day, causes inconvenience to witnesses and other persons by reason of the fact that they may be kept waiting in court for unreasonable periods. The concentration of inquests in a particular district is considered to be a question of administration, which should be determined by the appointing council. Under the present Coroners Acts the coroner may appoint deputies and assistant deputies, which appointments are subject to approval by the chairman of the council which appointed the coroner. It is considered that, in view of the fact that during the absence of a coroner his deputy or assistant deputy has the same powers as the coroner, the council appointing the coroner should have power to appoint these as well.

POST-OPERATIVE TOXAEMIA

Complications following an operation—and the majority of operations nowadays are on the abdominal contents—may arise from haemorrhage, infection (sepsis, peritonitis, phlebitis), obstruction of the intestine, or post-operative intoxication. This last group of cases, puzzling and difficult to treat, is discussed in a brochure by MM. Chabanier and Lobo-Onell.[1] It is fortunately not a common occurrence ; but all who have to do with the after-treatment of operations see from time to time patients who continue vomiting after return to bed, or in whom the vomiting recurs and who are liable gradually to sink into coma. Constipation and inability to pass flatus, with the abdominal distension and hiccup, give the picture of intestinal obstruction, but if the abdomen be opened a state of paralytic ileus only is found, sometimes in the small intestine, sometimes with great dilatation of the stomach. Not all cases are severe or fatal, and probably minor degrees of toxaemia often occur and recover. It is natural to consider the effect of the anaesthetic, and formerly the condition was regarded as delayed chloroform poisoning, but the condition may arise two or three days after the operation, when it is to be presumed that any toxic effect of the anaesthetic has had time to pass off. Biochemical changes occur and especially there is an increase in the non-protein nitrogenous bodies in the blood of patients suffering from post-operative toxaemia. But this condition is not simply a retention of nitrogenous breakdown products

[1] *Hypochlorémie et Accidents Post-Opératoires. Étude Clinique Pathogenique et Thérapeutique.* By H. Chabanier and C. Lobo-Onell. Paris: Masson et Cie. (22 fr.)

as the result of renal insufficiency, nor can it be explained by a ketosis or by a change in the acid-base balance of the blood. There is, however, a constantly observed diminution in the total chlorides of the blood. Chabanier and Lobo-Onell, after discussing various hypotheses that have been put forward to explain this, are in favour of the theory that at the site of trauma there is a change in cellular equilibrium and that chlorides are absorbed into the damaged tissues. Experimentally it may be shown that after injury to a muscle or organ the injured tissue shows a greater content of chlorides than the corresponding uninjured muscle or organ. An expansion of the theory is offered to cover the widespread effects on other organs of the body: the intermediate nitrogenous substances absorbed from the local injury become disseminated throughout the body and poison the essential organs of elimination, the liver and kidneys. The difficulty that these nitrogenous substances are unknown, unnamed, and unisolated is lightly passed over. The authors have put their theory to the test, however, and have been able to treat with success cases which after operation showed hypochloraemia and signs of intoxication. Using hypertonic (10 to 20 per cent.) saline intravenously or by rectum, they have observed the chlorides of the blood return to normal and the patients recover. They believe also that they have had fewer untoward results since preparing their patients with hypertonic saline before operation. The authors' results are well-documented with carefully controlled cases, and the subject is one of importance to all surgeons. For a generation now the routine administration of normal saline solutions by rectum, subcutaneously or intravenously, has been adopted to relieve post-operative shock, but mainly with the object of replacing fluid in the blood and tissues. Indeed, some surgeons hold that fluid alone is necessary, and that equally good results are obtained by enemata of warm water as by normal saline. According to MM. Chabanier and Lobo-Onell the salt is not only an advantage but is necessary in even larger doses than customarily given in order to minimize the dangers of post-operative toxaemia.

MEDICAL ART

The word "hobby" usually carries with it a suggestion of amateurishness, yet there is little evidence of the tyro in the exhibition of paintings arranged at the Royal Society of Medicine by the Medical Art Society. Trained to observe detail and aware of the importance of exact technique, the medical man with a modicum of innate ability might well be expected to give a good account of himself with brush and pencil. If space allowed, and if our detective powers were more highly developed, it would be instructive to attempt a correlation of subject and method with the specialty of the medical artist. It seemed, for example, fitting that a psychologist should label his highly accomplished painting "The Seamy Side of Harley Street," and that a pathologist should startle us with his colour values. The precision of line of the ophthalmic surgeon must, it might be thought, bear some relation to his professional *métier*. But that a bacteriologist should make his picture out of bacterial cultures, and so, as one newspaper says, "leave far behind the efforts of the sur-realists," goes far to prove the thesis that art and life have something in common with each other. "Nobody," the same paper remarks, "in the history of the world has ever designed a burning ship in germs before," and the curious should see Professor Fleming's problem picture before passing on to admire the landscapes and seascapes which pleasantly sustain the tradition of English painting.

THE GEOLOGICAL SURVEY AND MUSEUM

Medicine has taken a leading part in the foundation of the sciences, and amongst them she has made many notable contributions to geology. James Hutton, M.D., was one of the giants of "The Heroic Age of Geology" (1790–1820), when the foundations of the true science were laid. The Government first recognized the young science by appointing John Macculloch, M.D., at one time surgeon to the Royal Regiment of Artillery, geologist to the Trigonometrical Survey in 1814. His great geological map of Scotland appeared in 1836. On July 3rd, 1935, H.R.H. The Duke of York opened the new building of the Geological Survey and Museum in South Kensington, and the centenary celebrations of the establishment of the Geological Survey began the next day. It is of interest to note that a medical graduate of Edinburgh University, Sir John S. Flett, K.B.E., F.R.S., is Director of the Geological Survey of Great Britain. Sir John is a distinguished petrologist, and has been Director for fifteen years.

THE HALF-YEARLY INDEXES

The usual half-yearly indexes to the *Journal* and to the *Supplement* and *Epitome* have been prepared and will be ready shortly; they will, however, not be issued with all copies of the *Journal*, but only to those readers who ask for them. Any member or subscriber who wishes to have one or all of the indexes can obtain what he wants, post free, by sending a postcard notifying his desire to the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1. Those wishing to receive the indexes regularly as published should intimate this.

Mr. Wilfred Trotter will deliver the Lloyd Roberts Lecture on "General Ideas in Medicine" before the Royal Society of Medicine, 1, Wimpole Street, W., on Monday, September 30th, at 5 p.m.

We regret to announce the death at the age of 64 of Dr. Thomas McCrae in Philadelphia. Dr. McCrae was well known on both sides of the Atlantic and had many medical friends in this country. Among other publications he collaborated with Osler in *Modern Medicine* and in the later editions of the *Principles and Practice of Medicine*.

King Edward's Hospital Fund for London has received a sum of £10,000 from Mr. Roger Parr as a jubilee gift to its radium fund. It will be used for the purpose of facilitating various schemes which the fund has under consideration. Mr. Parr gave a similar sum in 1929 towards the purchase of the stock of radium which the King's Fund places out on loan to hospitals.

TREATMENT IN GENERAL PRACTICE

This article is one of a series on the management of some of the major medical disorders met with in general practice

THE TREATMENT OF PERSISTENT AURICULAR FIBRILLATION AND FLUTTER

BY

TERENCE EAST, M.D., F.R.C.P.

The treatment of paroxysms of auricular fibrillation and flutter, and of heart failure with fibrillation, is dealt with in other articles. When these arrhythmias are persistent they require management on rather different lines. Auricular fibrillation is about twelve times as common as auricular flutter. It is the commonest cardiac condition for which persistent treatment may be required. Although the two disturbances are similar in nature, it is convenient, from the point of view of treatment, to consider them apart.

Auricular Fibrillation

The completely irregular rhythm, best recognized by auscultation at the apex of the heart, usually associated with a rapid ventricular rate, makes diagnosis easy. In order to understand the rationale of treatment, a word on the nature of fibrillation may be helpful.

When the auricles are fibrillating the rhythmic formation of impulses at the sinu-auricular node is abolished, and co-ordinated systolic contraction of the chambers ceases. Instead, an impulse circulates round a chosen path in the auricle, making its revolution 400 to 500 times a minute. This is called "circus movement." At each revolution an impulse would pass down the bundle of His to the ventricle, if the bundle could conduct so many. But it can only transmit up to 250 a minute as a rule. Owing to variation in the path of the circulating impulse, and some degree of block in the auricular node and bundle, the impulses are transmitted irregularly. This is the reason of the rapid, irregular ventricular rate. The circus movement of auricular fibrillation (or of flutter) tends to persist indefinitely when once established. Hence the old term "pulsus irregularis perpetuus."

Mitral stenosis accounts for about 65 per cent. of all cases of auricular fibrillation. Almost all cases of mitral stenosis pass into permanent auricular fibrillation sooner or later. Most of the remaining 35 per cent. of cases are found in old people. In some, the action of a toxin is responsible, and a large number of those toxic cases are sufferers from thyrotoxicosis. It will be apparent that the two chief causes, mitral stenosis and old age, cannot be eliminated; this is another reason for the persistence of auricular fibrillation.

Auricular fibrillation leads to heart failure because it causes a persistently rapid ventricular rate. In addition, the normal acceleration of the heart on exertion or emotion is exaggerated and prolonged. A large proportion of the contractions are ineffective and a waste of energy. As long as fibrillation is still present the danger of an increase in the ventricular rate is always there. It must be remembered that fibrillation is either present or it is not. Misconceptions sometimes exist on this point. There is a tendency to associate the state of the pulse directly with the fibrillation. If the irregularity of the pulse is slight and the rate slowed, one hears the remark "fibrillating slightly"; and when the rate is fast and irregularly pronounced "fibrillating severely." This is erroneous. These variations depend on the state of the bundle of His; the fibrillation is unaffected. The treatment of persistent fibrillation aims at preventing the development or return of heart failure.

Digitalis in Fibrillation

The control of the ventricular rate must be maintained by the constant administration of digitalis. If the tincture is used the following prescription may be given:

℞ Tinct. digitalis ... ... ♏ x
Aq. chlorof. ... ... ad ʒ ss
One tablespoonful thrice daily.

Now that several solid preparations are available the equivalent of half a drachm of the tincture daily may be given in that way. The solid preparations are better than the tincture, as they do not deteriorate and they are convenient to carry about. One grain of the powdered leaf thrice daily, or digoxin (B.W. and Co.) one tablet of 0.25 mg. twice daily, or digitalis nativelle 1/600 grain twice or thrice daily, are the usual doses. Some patients may need larger doses: 4 grains of the powdered leaf daily, or 0.25 mg. digoxin thrice daily. It will be seen that 30 minims of the tincture are equivalent to 3 grains of the powdered leaf, or to 0.5 mg. of digoxin. With nervous and excitable patients 10 grains of potassium bromide may be added to each dose of the mixture containing the tincture. In these patients the action of the sympathetic on the bundle of His continually tends to cause undue ventricular acceleration.

Larger doses may be required when auricular fibrillation complicates thyrotoxicosis. But in these cases successful treatment aims at elimination of the hyperthyroidism, and the abolition of the fibrillation subsequently. Doses such as these can be maintained indefinitely, and rarely lead to toxic symptoms. If there is any tendency to toxic cumulative effect the drug may be withheld on one day in the week—Sunday for choice, when less work is usually done. Strophanthus is too variable in its action for the steady control of the ventricular rate. The infusion of digitalis is unsatisfactory because of its uncertain strength and liability to deterioration.

Life and Occupation

The patient with persistent fibrillation usually has valvular and myocardial lesions of some severity. He will have to lead a restricted life, and control strictly the amount of exertion he undertakes. Anything in the nature of heavy manual work is barred. In many cases a fair degree of activity is possible. The limits are set by what the patient can comfortably do. Sudden strain and exertion are particularly to be avoided. Pregnancy is dangerous for a woman with fibrillation, and should be terminated if it occurs. If any infectious illness arises, the daily dose of digitalis will probably have to be increased 50 or 100 per cent., according to the tendency of the apex rate to increase. In old people a certain amount of natural heart-block may keep the apex rate low and make the use of digitalis unnecessary.

The Abolition of Fibrillation

In suitable cases abolition of fibrillation may be attempted by means of quinidine. This drug is a cardiac depressant, and may get rid of the circus movement in the auricle by increasing the duration of refractoriness in heart muscle. As it slows the rate of the circus movement at the same time these two effects may cancel one another, so that no beneficial effect is obtained.

When mitral stenosis is advanced, or there is evidence of myocardial damage in the senile type of case, quinidine is rarely successful, and is best not tried. Control with digitalis is the method of choice. If the accompanying lesions are but slight, and the heart is strong, it may be possible to abolish fibrillation. There is one type of case in which quinidine is usually successful—that in which the fibrillation persists without apparent cause. Some transient illness may have brought it on.

During the course of treatment the patient should be confined to bed. Quinidine sulphate may be given in 5-grain doses in a capsule, or in an acid mixture.

℞	Quinidin. sulph.	gr. v
	Acid. sulph. dil.	♏ v
	Syr. aurant.	ʒ j
	Aq. menth. pip.	ad ℥ j

A preliminary dose should be given first to ascertain whether the patient has any idiosyncrasy. If there is no headache, nausea, vomiting, or malaise the course may be completed. It is advisable to keep a chart of the apex rate, for there may be some rise after the first two or three doses. This acceleration is not likely to cause trouble if the patient is already under digitalis. After the preliminary dose further doses of 5 grains may be given every three or four hours until a normal regular rhythm has been resumed, or until 30 or 40 grains have been taken, or until the patient shows signs of intolerance. Some push the total dosage of the drug up to 60 grains or more. Another method of dosage is to prescribe 5 grains every two hours during the day for six doses, and repeat this again on two or three successive days. If quinidine is successful it usually acts after the first few doses. If normal rhythm is resumed it is wise to give 5 grains daily for a week or two in order to obviate any tendency for fibrillation to return.

Auricular Flutter

Auricular flutter differs from fibrillation in that the course of the circus movement is constant and regular. The rate of circulation is slower than in fibrillation—usually about 320. Ventricular response is regular as a rule, occurring at a definite ratio—1 to 2, or to 3, or to 4 of the revolutions of the impulse of the auricle, with resulting rates of 160, 106, or 80 per minute.

Flutter is more likely to be associated with serious myocardial disease than is fibrillation. The age incidence is higher ; it is more common in men than in women.

Digitalis.—The action of digitalis is similar to that obtained in auricular fibrillation, and the ventricular rate can be slowed. There is usually some difficulty in keeping the rate low, as there is always a tendency to increase to a higher ratio—from 1 to 4 (apex 80) to 1 to 3 (apex 106), or 1 to 2 (apex 160): a 1:1 ratio with an apex rate of about 300 is sometimes met with. As a result, the treatment of persistent flutter with digitalis is not so satisfactory as in fibrillation. It is often possible to transform flutter into fibrillation if full doses of digitalis are given, say 2 drachms of the tincture daily for three days to a patient weighing 10 stone. The rate at the apex falls, to a 1 to 4 ratio, and then may become completely irregular. This shows the change to fibrillation. If the digitalis is stopped a return to normal rhythm may result in a day or two, sometimes in a few hours. Some cases persist in fibrillation. They are better off than with flutter, as their apex rate is more easily controlled, and the sudden increases in rate are avoided. About 50 per cent. of cases of flutter can be changed to fibrillation. In about 30 per cent. of these there is return to normal rhythm.

Quinidine.—If the flutter persists in spite of digitalis quinidine may be administered as in a case of fibrillation. The circus movement may then be abolished, with a return of normal rhythm. Quinidine may also be used if digitalis has changed flutter to persistent fibrillation in the hope that normal rhythm may be resumed. The treatment succeeds in about 30 per cent. of cases. Heavy doses of quinidine, such as may be needed, should not be given when the heart is grossly diseased or near to failure. The patient should stay in bed while the abolition of flutter is being attempted.

Life and Occupation.—Patients with persistent auricular flutter need to lead a very restricted life. The heart is usually the seat of considerable disease. The apex rate is difficult to control. Digitalis must be given continually on the same lines as for a case of persistent fibrillation.

A PAIR OF SPECTACLES

BY

J. D. M. CARDELL, F.R.C.S.

The date when the first pair of spectacles was made has not been established beyond doubt. It has been stated that the Chinese at one time used bleached horn from which lenses were fashioned, while Nero is said to have used a precious stone mounted in a ring, through which he watched games in the circus. This may have been a lens, or merely a tinted protection against over-strong light. In a fourteenth century manuscript in the Bibliothèque Nationale in Paris there is a picture of St. Paul using a pair of spectacles. Marco Polo records that, when travelling in China in 1270, lenses ground from quartz or semi-precious stones were being used as an aid to sight. So much for the more nebulous historical evidence.

From the Thirteenth Century Onwards

In 1276 Roger Bacon refers to the possibility of glass lenses being used by those who are old and have weak sight. Spina, a Dominican friar who died in 1313, and is generally considered to be the inventor of spectacles, probably exploited Bacon's idea, though there is a tomb in the Church of St. Maria Maggiore with the rather naïve epitaph:

"Here lies Salvino d'Armato of the Armati of Florence, Inventor of spectacles. God pardon him his sins. A.D. 1317."

Salvino may, however, have merely popularized Spina's "invention."

The date is therefore fairly certain as regards the first use of spectacles in Europe. The original type was a single magnifying glass with a short handle ; another lens was then placed in the opposite end of the handle with a hinge in the middle so that both eyes might be assisted. There are numerous references, which need not be cited here, to the use of spectacles in the thirteenth and fourteenth centuries, Bernard Gordon, professor of medicine at Montpellier in about 1305, being the first physician to refer to them. The introduction of printing probably increased the demand for spectacles.

The lenses were first made of tourmaline, beryl, quartz, and later of glass. The glass employed was primarily produced in Venice, but subsequently its manufacture extended to Germany. The first German frames were

made of leather, the bridges being reinforced with fish-bones. At a later date strings looped over the ears were used to steady the glasses. (One still meets this method employed as a first-aid measure to broken frames!) Side pieces of metal were next introduced, and glasses with frames of iron, brass, and copper were sold in London during the eighteenth century for 1s., a pair with gold frames costing between £10 and £20. The lenses were circular, but ovals were in vogue in the early part of that century. At the beginning of the Georgian period tinted glasses were used as a protection against strong light. Tortoise-shell frames date from the reign of George III. Steel frames again came into favour, especially at the end of the nineteenth century, to be followed by the rimless type of spectacle. "Bifocals" were, of course, first introduced by Dr. Benjamin Franklin at the end of the eighteenth century.

Spectacles of the Present Day

It will thus be seen that there has been ample time in which to perfect glasses and their fitting, but it is sad to have to admit that not all spectacles made to-day are an improvement on some of the crude forms of the seventeenth century. That this state of affairs still exists is due to the marvellous tolerance of the eyes, and the fact that they are inarticulate—or perhaps one might say that their complaints are often aired by parts of the body remotely situated, and therefore remain unrecognized as signs of eyestrain. Furthermore, there is a sad ignorance—even amongst well-educated people—of the importance of glasses accurately prescribed and properly fitted and made. Such people are quite prepared to choose glasses from a tray in a store. In such spectacles both lenses are usually supposed to be of the same strength, irrespective of the fact that it is comparatively rare for both eyes to be of exactly the same refraction (just in the same way it is rare for both arms to be of the same length or both sides of the face to be symmetrical).

Manufacture of Lenses

The exact composition of the glass of each manufacturer is a jealously guarded secret. Suffice it to say that the glass used in spectacles has little or no lead in it, so that splinters entering the eye or orbit are not opaque—as is, for instance, some bottle glass—to *x* rays. Quartz, which was used for the "pebbles" of the past generation, lacks homogeneity, and gives a lens whose power varies from one point to another. It has now been superseded by glass.

The glass for optical purposes differs from that used for other instruments such as microscopes or cameras. The essential ingredients are silica (white sand or ordinary sand) and a suitable base, such as sodium carbonate. Sometimes lime or boric acid is added. Crown glass or soda-lime glass is most commonly used. Flint glass or a potash-lead glass is very fusible, easily worked, and, having a high refractive index, is employed for the reading segment of bifocal lenses. In preparing crown glass for optical purposes a cylinder is blown on a "blowing iron." This is cut longitudinally with a diamond and rolled out flat on a heated stone slab. Disks of an appropriate size are cut and are known as "blanks."

Special tinted glass is sometimes required. As a rule this is obtained by adding 6 per cent. of titanium dioxide and nitre, or 1 per cent. of a higher oxide of vanadium, with or without nitre, together with manganese dioxide, cobalt, nickel, or uranium oxides. Of the best-known tinted glasses "Crookes A" transmits 86 per cent. of daylight, "Crookes A 2" 78 per cent., "Crookes B" 46 per cent., and "Crookes B 2" 20 per cent.

Faults in Optical Glass

There are several faults which may be present in optical glass and render it unsuitable for optical purposes. In testing the quality of various types of glass for spectacles the coefficient of cubical expansion is most important. This should be as small as possible in order to eliminate the risk of breakage due to temperature changes. A first-quality glass is water-white; the refractive index of crown glass is 1.5 and of flint 1.58. These indexes must be constant. A baryta boron-silicate glass is considered in the first class, a zinc or alumina base free from alkali second, and a soda-lime alkali third.

Some of the faults may be detected in the "blank" state, while others may only be discovered after grinding has commenced. The former are exemplified by bubbles, colourless striae, and green colour; an example of the latter is the appearance of cracks indicating strain in badly annealed glass. The faulty grinding or polishing of the "blank" may make the glass unfit for use, by causing surface waves, inaccuracy in strength, greyness, and holes. Good lenses do not vary in strength from the ophthalmic surgeon's prescription by more than 0.06 dioptre. Cylinders must furthermore be accurate as to axis within 0.5 degree, and the optical constants of all lenses must be 95 per cent. true.

Cheap mass-production lenses are frequently ground from defective blanks for too long or too short a time, and so tend to exhibit many of the defects mentioned. Since lenses are graded according to the presence or absence of these defects, it is obvious that there are many grades of lenses, the better of which are used in more expensive spectacles. It is practically impossible to obtain a good-grade lens at the cost at which some glasses are offered. It should be remembered that it takes men of vast experience, who do nothing else, to eliminate faulty lenses. It is thus hardly to be expected that a mass-produced spectacle can approach that provided by the optician who concentrates only upon the making of glasses. Thus the finished lenses supplied by one foreign firm were such that about 75 per cent. had to be rejected by a well-known optician.

Grinding of Lenses

In the better type of spectacle each lens is ground individually under the constant care of a skilled workman with a knowledge of the size of rim or "eye" into which the lens is to be inserted. In mass-production lenses a large number are ground at one and the same time. In any such batch lenses of all grades are to be found after grinding, for, though they need not vary as to power, there are often considerable differences in quality and finish. Grinding is effected with the help of progressively fine emery, while polishing is done with a tool covered with felt suitably treated with wax and fed with rouge (iron oxide) and water. The best lenses are polished on wax only, as distinct from cloth impregnated with wax. This, of course, involves longer time, and is an unsound commercial proposition if cheap lenses are to be supplied.

The individually ground lenses are very carefully centred, and then cut so that their optical centres correspond to the patient's interpupillary distance, no matter what size of frame is demanded by the future wearer's face. In this respect it is important to note that the same individual's interpupillary distance will vary when he is looking in the distance, reading music, and reading print; due allowance for this must be made in the finished spectacles. Thus is ensured an accuracy which can never be a certainty with mass-produced lenses "out of the box" fitted to frames "off the shelf."

Frame Making

The making of a reliable frame is a difficult but interesting process. Good steel frames are made by hand, from grooved steel strip and steel wire. They are constructed to fit individual facial measurements, whereas those produced *en masse* are made in sizes each differing from the next by a standard amount—for instance, the difference in width between one size and another is usually 2 mm. Since the nature of this type of frame allows of very little adjustment, there is room for what a competent worker would regard as a fairly gross error. The cheaper tortoise-shell frames are made not from the solid shell but from flakes cemented and pressed together. Unless exceptional care is taken, the slightest amount of grease between one layer and another will lead to eventual cleavage in that plane. The better shell frames are cut out of the solid shell, and by treatment in boiling brine are moulded to the exact shape required by the purchaser's face.

Each particular frame is made with the purpose for which it is to be used in view, and frequently many fittings on the face and minor adjustments are required before perfection is attained. A good pair of spectacles will balance evenly on a pencil placed under the bridge, irrespective of any difference in strength of the right and left lenses. This is made possible by special grinding. Not everyone can wear tortoise-shell frames, since they are unsuitable where a narrow interpupillary distance is coupled with a wide nose (and vice versa) and in small faces generally. The pad bridge is unsuitable where the interpupillary distance is wide and the bridge of the nose narrow, and with asymmetrical faces.

To a certain extent these difficulties can be overcome by individual grinding, so that the optical centres—that is, the point in the lens at which no prismatic displacement of image takes place (and this is not necessarily in the centre of the lens)—are decentred away from the geometrical centres. This is only advisable in the better-class frames, where rotation of the lenses is rendered impossible by some locking device. Should such lenses need repair the spectacles must be returned to the original maker to ensure correct decentring of the new lens. In the case of asymmetry it is generally better to have the frame itself made asymmetrically.

Fitting of Spectacles

There is a well-defined technique required in the proper fitting of frames, and this technique, the laws of which are perfectly understood by properly trained opticians, has to be practised assiduously for many years before conscientious fitting can be undertaken. The many and various problems presented by the diversity of human eyes and of their requirements cannot be solved by simply attending a course of lectures and passing an examination. The accurate fitting of the optical centres of the lenses to an interpupillary distance which varies with the different activities of the eyes, and the moulding of the frame to facial asymmetry are two of the very simplest problems to be confronted. The height of the optical centres from the lower margins of the lenses in respect of each other must be suited to the purpose for which the glasses are ordered.

The optical effect of moderately strong lenses which have to be displaced forward owing to the particular formation of the bridge of the nose or of the lashes, or as a result of exophthalmos, provides a more complicated problem. The frame must therefore be an individual fitment, which is not only the most comfortable to the patient and suits his aesthetic taste, but, what is of the greatest importance, holds the lenses in such a position that the final optical effect is perfect for the particular purpose in view after the desiderata considered above have been satisfied. Thus different fittings are required for constant or general wear, distance, music, reading print, jewel setting, etc., and the fitting for one purpose might, in any individual case, be harmful if used for another.

Besides being a technician, the fitter must also be an observant student of psychology. It would be foolish to give a heavy-handed person a delicate rimless frame, even though he might desire it. Again, in the case of a woman, the type of hat worn must be considered. Tight-fitting hats often press the sides of the frame uncomfortably into the head, and certain forms of hairdressing preclude frame-sides which curl round behind the ear. An impatient, highly strung person may wish for folding spectacles, but it is soon realized, after watching him handle a pair, that it would prove a constant source of annoyance, and an unwise type of frame to recommend. In the same way it is a physical impossibility for some people to put on pince-nez at the identical angle twice consecutively. Where the lenses are not weak spheres, or where there is any correction for astigmatism, the oculist's prescription is altered every time they are placed on the nose.

Ill Effects of Inferior Glasses

In order to reduce the cost of glasses and to effect rapid repairs or delivery, the frames may be of stock size and the lenses may be of poor quality glass, their power being inaccurate. The position of high-powered lenses (such as in cataract) may give an effective strength entirely different from that arrived at by the oculist in the trial frame, and the optical centres may be misplaced.

Ill-fitting frames, especially in the case of children, may cut the nose badly, or chafe the auricular furrow at the back of the ears. The cheaper imitation shell frames are influenced by the heat and moisture of the head, the sides tend to open, and though snugly fitting at first, become, after a time, too loose. They may continually slip down the nose, or may fall off and break. Again, in poor frames the lenses may rotate—a serious occurrence when the lenses have been decentred, or where there is a cylindrical correction.

Poor quality lenses will scratch easily, show chromatic aberration, and have a wavy surface. Such lenses will not give the eyes the necessary relief. Furthermore, the centres may be displaced. When this results in one centre being higher than the other, a false hyperphoria is produced which will give rise to marked eyestrain. Another frequent fault is where the centres of reading glasses are too wide apart. One sees numbers of cases in which this fault, increasing the amount of convergence required, leads to tiredness, headaches, and finally inability to read. This fault is very commonly found in bifocals supplied by inexperienced opticians.

Unfortunately many lay people think they know what is best for their eyes. Two examples may be given of this. There have been numerous cases where a patient, having found that the vision is getting poor with glasses which have been in use for some time, requests that the "next strength" be supplied without a surgeon's prescription. Unhappily this is sometimes acceded to, and a stronger glass which brings the vision up to something like normal is provided. Later—frequently too late—it is found that the dimness of vision was not wholly due to lack of strength of the glass, but to an insidious disease such as glaucoma. Secondly, the hypermetropic patient will sometimes refuse to wear prescribed glasses,

because the ciliary muscles, having got into a state of spasm through the non-use of glasses or the use of too weak a correction, will not at first relax and allow the glasses to do the focusing which they have got into the habit of doing for themselves.

The oft-repeated phrase of the late Mr. J. H. Fisher comes to my mind, "I did not give you those glasses to see with." I have seen a patient with bad headaches wearing minus 3 dioptre spherical lenses obtained from a shop when plus 1 dioptre spherical was required. The reason for the choice of these lenses was that, in most cases, an emmetropic eye can get a clearer though smaller image when a minus lens is placed in front of it. It is not always a case of prescribing the glass with which best vision is obtained.

There were once machines, on the penny-in-the-slot principle, where anyone requiring glasses looked through binocularly adjustable telescopes at some print, when, by turning knobs the print was focused to the victim's entire satisfaction, a button was pressed and the "correct" prescription printed on a neat card fell out of the machine. Fortunately this particular type of horror has vanished.

Conclusion

The eye and its well-being is a precious asset. How precious can only be fully appreciated by those who are irrevocably becoming blind. Because the eyes are so efficient, adapting themselves so remarkably to all forms of adverse conditions and abuse, we are rather apt to treat them thoughtlessly, forgetting that in so many cases too much may be expected of them. As we are only granted one pair of eyes to last a lifetime, and that, once lost, no form of artificial eye will be of any visual use, it obviously behoves us to treat them fairly, and to be certain that nothing but the best be provided for their use. A poorly conceived and made "aid" to vision may in the end prove more disastrous than none at all. Those who have the preservation of the sight of their fellow beings in their care should therefore be able to differentiate between what is good and what is harmful to the health of the eyes.

BIBLIOGRAPHY

Thompson, C. J. S.: "The Origin and Development of Spectacles," *The Connoisseur*, October, 1934.

MEDICINE AND THE EMPIRE

B.M.A. LUNCHEON IN LONDON

At the invitation of the Officers of the British Medical Association a luncheon party was held in London at Grosvenor House on June 27th, when the principal guests were Mr. G. M. Huggins, F.R.C.S., Prime Minister and Minister for Native Affairs, Southern Rhodesia; Colonel the Hon. Herbert Bruce, F.R.C.S., Lieutenant-Governor of Ontario, and Mrs. Bruce; the Hon. Sir Stanley Argyle, M.B., late Premier, Treasurer, and Minister for Health, Victoria; Sir Harry Batterbee, Assistant Under-Secretary of State, Dominions Office; and Sir Thomas Stanton, Chief Medical Adviser to the Secretary of State for the Colonies. The guests were received by Dr. E. Kaye Le Fleming (Chairman of Council) and Mrs. Le Fleming, and Dr. S. Watson Smith (President of the Association).

After luncheon Dr. LE FLEMING, extending a warm welcome to those present, said that the Council had long felt its disadvantage in having no official means of paying honour to important members of the profession from over-seas who passed through the metropolis. This luncheon party gave an opportunity to repair the defect in an informal way during the visit of Mr. Huggins, Colonel Bruce, and Sir Stanley Argyle. To Sir Harry Batterbee and Sir Thomas Stanton the Association owed a particular debt for their help in the arrangements for the forthcoming Round-the-world Tour to Australia. Dr. Le Fleming recalled with pleasure that Mr. Huggins had been chairman of the Mashonaland Division of the B.M.A. for a number of years and in that capacity attended the Annual Meeting at Edinburgh in 1927. He assured Colonel Bruce that all who went to the Winnipeg meeting in 1930 had a lively recollection of Canadian hospitality, while many of those present looked forward to meeting again next September in the State of Victoria, of whose Government Sir Stanley Argyle had been the head.

Mr. HUGGINS, in acknowledging the toast, said how much he valued the opportunity of meeting distinguished members of his own profession. It was always his wish to keep contact with practice, his first love. This informal friendly gathering came as a pleasant contrast to large official functions. Colonel BRUCE expressed his keen pleasure at meeting old medical friends and making new ones. Like Mr. Huggins, he also had to "lead a double life" and perform in public life many operations which were unknown to surgery. Speaking of his happy memories of past B.M.A. Annual Meetings, Colonel Bruce paid tribute to the wonderful influence of the Association, both in the medical profession and in the world at large, through its 35,000 members with Branches throughout the Empire. The Jubilee broadcast on May 6th had brought home to all the solidarity of the British peoples. They heard "London calling" one part of the Empire after another, and then—most thrilling moment—the King's voice. Sir STANLEY ARGYLE expressed to the parent body the gratitude of the Victorian Branch for the privilege of receiving the B.M.A. in Melbourne during the celebration of the hundreth year of that State. Victoria was British through and through, and felt it a signal honour to entertain the B.M.A. Small gatherings such as this in Grosvenor House, and large gatherings such as they looked forward to in Melbourne, kept the life blood of the Empire circulating. It was, he said in conclusion, a happy and valuable thing for members of the great scattered family to meet and know each other. Upon this note a very enjoyable and successful party ended.

The company present included, besides those whose names are given above: Mr. H. S. Souttar (Chairman of Representative Body, B.M.A.), Mr. N. Bishop Harman (Treasurer B.M.A.) and Mrs. Bishop Harman, Sir Henry Brackenbury (late Chairman of Council and Vice-President B.M.A.) and Lady Brackenbury, Dr. C. O. Hawthorne (late Chairman of Representative Body and Vice-President B.M.A.), Dr. W. Paterson (Chairman, Dominions Committee, B.M.A.) and Mrs. Paterson, Lord Dawson of Penn (President, Royal College of Physicians of London and Vice-President B.M.A.), Sir Holburt Waring, Bt. (President, Royal College of Surgeons of England), Sir Humphry Rolleston, Bt. (Vice-President B.M.A.), Dr. Alfred Cox (Vice-President B.M.A. and late Medical Secretary), Dr. Robert Hutchison (President, Royal Society of Medicine and President of the Section of Diseases of Children, Melbourne Meeting, B.M.A., 1935) and Mrs. Hutchison, Dr. J. S. Fairbairn (President, British College of Obstetricians and Gynaecologists, and President, Section of Obstetrics and Gynaecology, Melbourne Meeting, 1935) and Mrs. Fairbairn, Sir Thomas Dunhill (member of the Council, B.M.A., and President, Section of Surgery, Melbourne Meeting) and Lady Dunhill, Sir George Badgerow and Lady Badgerow, Mr. W. Rowley Bristow and Mrs. Bristow, Dr. G. C. Anderson (Medical Secretary, B.M.A.) and Mrs. Anderson, Mr. L. Ferris-Scott (Financial Secretary and Business Manager, B.M.A.) and Mrs. Ferris-Scott, Dr. N. G. Horner (Editor, *British Medical Journal*) and Mrs. Horner.

PREVENTION OF TUBERCULOSIS IN CHILDREN

CONFERENCE AT SOUTHPORT

The twenty-first Annual Conference of the National Association for the Prevention of Tuberculosis was held at Southport last week from June 27th to 29th. The subject for discussion was the responsibility of the nation towards the child in respect of this disease, and various aspects of prevention and treatment were discussed at successive sessions. The chair was taken by Sir Robert Philip.

PROPHYLACTIC MEASURES IN POLAND

Dr. M. Skorowska-Rudolf of Warsaw, associate secretary-general of the International Union against Tuberculosis, said that the task of protecting the community against tuberculosis began with the birth of the child, for the death-rate curve from this cause ran high in the first year of life, when immunity was almost non-existent. The next summit of infection occurred in adolescence ; it ought to be lowered by multiplying open-air schools and colonies for threatened children, and by arranging for infection to be dealt with promptly at its first appearance. Poland had adopted the B.C.G. vaccination system. Of 32,533 children notified as diseased in 1933–4, tuberculosis of the peribronchial glands accounted for 67.4 per cent., and bone, joint, and skin cases for 12.9 per cent. It had been proposed to install six beds per 100,000 population for expectant mothers suffering from tuberculosis, in order to allow the performance of B.C.G. vaccination and maternal instruction as regards the rearing of the children. Twelve beds per 100,000 would also be set aside for inoculated children, to create a kind of preventorium. The number of hospital beds for tuberculous children between the ages of 3 and 7 should be not fewer than five per 100,000 of population, and the comparable number of sanatorium beds should amount to ten. Forest school preventoriums should be provided for school children with forty beds per 100,000 population, and special "half-sanatoria" should be established in cities for children from tuberculous families in order to enable them to receive additional nourishment there, and to have daily rest periods. In 1934 in Poland over 160,000 children had been accommodated in summer and winter "vacation colonies," including 6,403 in "cure colonies" in health resorts under medical supervision and a sanatorium regime. Regulations had been passed to forbid the sale of milk and milk products containing infectious organisms, to prevent tuberculous persons from being engaged in the milk industry, and to secure the establishment of preventoriums ; a State Act against tuberculosis was being prepared to ensure the adequate protection of children.

Dr. G. Lissant Cox, chief tuberculosis officer to the Lancashire County Council, stated that the child could be best safeguarded against infection from human sources by improving the environment, for a higher standard of living and better housing would reduce the infection rate.

In Lancashire it was regarded as of the greatest importance that the adult infective case should be found, isolated, and treated with a view to protecting the children. *X* rays were useful in detecting cases before the appearance of symptoms. Overcrowding and undernourishment were two of the most urgent factors calling for attack. Poverty caused tuberculosis, and tenement dwellings led to a greater degree of overcrowding than was found in separate houses.

Major A. B. Atkinson, F.R.C.V.S., discussed the protection of the child against tuberculosis, with special reference to the milk supply. He criticized constructively the Tuberculosis Order of 1925, which he rated as an excellent departmental attempt to begin dealing with a big problem, but containing provisions which required strengthening. Notification of disease was inadequately carried out. There should be examination of all bovine animals on the premises, and not only of the suspected one. It was not always realized that a great many animals which were extensively infected did not cough, but showed other clinical signs which ought to be regarded as equally important. Prosecution should follow in all cases when a local authority had been satisfied that a diseased udder had not been reported with all possible speed. The practice of getting rid of infected cattle surreptitiously should be stopped. The veterinary supervision of many markets, fairs, and sales was as yet non-existent, though highly desirable. The thorough disinfection of infected premises was seldom properly enforced. Measures to safeguard the milk supply needed strengthening. There should be no notice given of the time of an inspection. The speaker thought that the maintenance of the profitable tubercle-free dairy herd was almost commercially impossible to-day, and the attested herds scheme of the Ministry of Agriculture bristled with so many difficulties that it had been joined by only a few stock owners. The Accredited Herds Scheme was similarly ineffective, the proffered bonus being largely illusory. The milk industry was suffering acutely from over-production. Veterinary inspection of the herds solely for the detection of tuberculosis of the udder had a strictly limited utility unless accompanied by enlightened and progressive legislative and administrative reform. There should be a statutory warranty of sale that all cattle had passed the tuberculin test, a bonus on milk used for rearing heifer calves and approved stud bulls, legislation for the control of bovine abortion and Johne's disease, a new Order of the Ministry of Agriculture regulating the housing of animals, and veterinary supervision directed to the reduction of clinical, not merely mammary, tuberculosis. The present expenditure of a rate of one-seventh of a penny in the pound gave no substantial assistance in protecting children from bovine tuberculosis.

BOVINE TUBERCULOSIS IN DENMARK

Dr. Nathan Raw traced the steps which had led to the incrimination of bovine tubercle bacilli as causes of disease ; he believed that the two types, bovine and human, were mutually exclusive in the human body. Since eradication of tuberculous dairy cows had so far proved impossible in this country, though effected in America, carefully controlled pasteurization was essential. Calves could be satisfactorily immunized by the injection of avirulent and non-pathogenic cultures of human tubercle bacilli. Dr. Raw referred to the possibility of bovine bacilli becoming transformed after years of residence in the human host into the human type, and mentioned other lines of investigation which still needed to be followed.

Dr. M. Christiansen of Copenhagen said that the false doctrine that a few bovine tubercle bacilli in milk would protect against human tuberculosis still needed combating. The danger of tuberculous herds was not yet properly appreciated. Pasteurization, though necessary, had distinct drawbacks, reducing the food value of milk, and the only truly effective means of protection against bovine infection was the eradication of tuberculosis from herds. Since 1892 Denmark had utilized Professor Bang's method of tuberculin testing followed by slaughter of animals which gave a positive reaction and in which the milk supply was infected. Other reacting animals were kept isolated and were watched, still being kept for milk pro-

duction and sometimes for breeding. Calves of reacting cows were transferred as quickly as possible to the non-reacting herd, and were later used as stock animals. By this scheme eventually the stock consisted entirely of sound animals, and the result was achieved on an economic and financially easy basis. Bang's method had always been optional in Denmark. Tuberculosis in cattle had now been completely eradicated on several Danish islands, and a sanitary regulation now enacted that from 1938 all milk distributed in Copenhagen would have to come from healthy tuberculin-tested stocks. He thought it would not be long now before tuberculosis in cattle would have disappeared from the greater part of Denmark.

B.C.G. Vaccination

Dr. E. Rist of Paris said that B.C.G. vaccination was now considered to be safe, and he discussed the evidence relating it to its immunizing value. He quoted the work of Wallgren in Sweden as showing that it could protect previously uninfected children against virulent infection, but the immunity was probably neither lasting nor absolute. With Heimbeck, Naeslund, and other Scandinavian workers, Wallgren had introduced such effective improvements in technique that B.C.G. vaccination had now been recognized as definitely valuable.

Dr. K. Neville Irvine, Oxford, maintained that it had now been proved that B.C.G. vaccination was not dangerous in practice, and produced a definite increase of resistance to tuberculosis, though its degree was difficult to assess. The protection was certainly not absolute, but to say that B.C.G. reduced the morbidity rate from tuberculosis in children by at least one-half would be regarded by most investigators as erring on the side of caution. The vaccine was being used in every European country except our own ; clinics for its investigation had spread so far as Tokyo ; it was safe in inexperienced hands ; and it was inexpensive. The oral method of administration was irregular in its results, and subcutaneous inoculation, though very effective, tended to produce a small ulcer which might even require aspiration. The intradermal method, on the contrary, never produced anything worse than a small ulcer ; the local reaction was never severe, and there was no general reaction. The speaker announced that the pathologist at the Westminster Hospital was prepared to equip a special laboratory for the proper production of B.C.G. vaccine if he was assured that there would be a regular demand and the necessary permission could be obtained. The vaccine was not made in England, and could only be imported under licence.

Early Recognition of Infection

Dr. C. Cameron, medical superintendent of East Fortune Sanatorium, remarked on the multiplicity of the portals of entry of tuberculous infection. The possibility of primary lung infection had been made clear by radiographical examinations. Thoracic infection was not so gloomy from the prognostic standpoint as had been thought. It seemed to be certain that tubercle bacilli could gain entry to the body through the nose, mouth, and throat without leaving signs of their passage, other than the development of tissue hypersensitiveness to their protein constituents. With lodgement effected in glandular tissues, skin manifestations might occur, or recurring attacks of phlyctenular conjunctivitis, with pleurisy and definite parenchymatous areas of disease in the lung—all incidental to the main lymphatic spread and showing a strong regressive tendency, while many of them were related to the stage of hyperallergy. The third stage of disease was marked by extension to the viscera or bony structures. The time necessary for the appearance of allergy in a child rarely exceeded a few weeks, and the tuberculin test could be performed. Infection and disease were not synonymous. In every household known to contain a tuberculous member the reaction of the children should be determined, and positive reactors be treated suitably. It was not the casual contact with infection that killed ; it was the frequently repeated or the massive dose. The tuberculin test should never be omitted in the elucidation of obscure symptoms in children, even when no source of infection was apparent.

Dr. N. Tattersall, chief clinical tuberculosis officer for Leeds, commented on the difficulty of giving practical expression to the knowledge gained by tests for infection. He thought that there was a considerable group of children in whom it was possible to recognize a stage of infection —the unstable or significant lesion—which was an imminent danger to them, particularly in adolescence. A much wider application of *x* rays would probably bring many more of these cases to light. This would involve the transfer to the school doctor of more of the tuberculosis detective work ; the clinical examinations of school children at present were inadequate as regards the recognition of early tuberculosis. Too much stress had been laid on malnutrition as an evidence of this disease, whereas many children who had it were well nourished and looked healthy. Every child should have a tuberculin test when starting school life ; it should be repeated in the middle years, and again on leaving school. Every child—not merely the positive reactors—should be *x*-rayed at the same stages of life. Close co-operation between the tuberculosis dispensary and the school authorities would be essential. Investigation was also called for as regards the blood picture in children, which would often reveal the beginning of disease. It was highly necessary to concentrate more intensively in the future on means that would enable a more sharp distinction to be made between simple infection and significant disease.

Dr. H. Midgley Turner, clinical tuberculosis officer for Sheffield, also pleaded for the systematic examination of children from time to time, with special reference to the lymphatic glands related to the three chief portals of infection—namely, the upper and lower respiratory tract, and the bowel. It could not be too strongly emphasized that tuberculosis in children was essentially a disease of the lymphatic system, fatal cases being due to the failure of this system to retain the disease in the gland filters. The mediastinal and mesenteric glands were far too seldom examined with the care that pathological considerations indicated should be taken. The supervision of infected children could not be entrusted to any but actively practising consulting physicians or tuberculosis physicians with full *x*-ray facilities and observation beds at their disposal ; the school medical service could not do this work, for it had no practice in clinical medicine.

Dr. L. S. T. Burrell commented on the value of examining children for tuberculosis. The tuberculin test was not of practical importance, because the large majority of tuberculin-positive persons did not develop clinical tuberculosis. What had to be decided was whether a child was likely to develop the disease, or was sufficiently closely in contact with infection to be endangered. It was therefore even more important to examine the adults in an infected household than the children.

Open-air Schools

Dr. R. P. Williams, medical officer to the Board of Education, reviewed the development of the open-air school system from its inauguration in 1904 in Germany, and enumerated its potentialities. For building, the Board suggested £50 per place as a reasonable figure ; the cost of maintenance averaged £20 to £35 annually in day schools, and from £60 to £70 in residential schools. The cost per place in elementary schools was £12 4s. 6d. a year. Parents paid a weekly sum to cover the cost of

food, and sometimes also of transport, the amount ranging from 3s. 6d. to 5s. a week. Day and residential schools provided treatment for the child in the early and non-infectious stages of the disease; treatment for the delicate contact; a centre for the teaching of personal hygiene, which would limit the spread of the disease; a useful means of educating the public and of training students; ideas as regards the construction of ordinary schools; and clinical opportunities for the school medical officer.

Dr. C. J. Thomas and Dr. Noel Bardswell, of the London County Council, in a joint paper, described the steps taken by the London County Council in this respect, and the obvious advantages that had been derived. Physical improvement was accompanied by an increase of mental alertness; there was a remarkable and complete freedom from catarrhal infections, and this had a great preventive value in respect of tuberculosis. Constant viligance was necessary to ensure that complete sanatorium conditions were preserved; heating was unnecessary and evil in its results, fouling the air. There must also be an ample supply of good nutriment, since the metabolic processes were stimulated and appetite increased.

THE RECOMMENDATIONS OF THE POISONS BOARD

THEIR EFFECT ON MEDICAL PRACTITIONERS

For a clear appreciation of the recommendations of the Poisons Board[1] it must be understood that they consist of two separate parts. The Poisons List is a list of substances which the Board recommends should be treated as poisons. The draft Poisons Rules prescribe the control which the Board recommends should be imposed on the substances in the List. The Schedules to the Poisons Rules contain the names of substances grouped according to the degree of control which it is proposed shall be exercised over them.

The List is largely based upon the present Schedule of Poisons, which it elaborates in greater detail. It is with the Rules rather than with the List that the medical profession will be concerned. Their main provisions are set out in the following summary, but it should be borne in mind that the Rules are at present in draft only, and may be substantially modified by the Home Secretary before they are made and laid before Parliament.

PURCHASE AND SUPPLY OF POISONS

A medical practitioner may purchase poisons from any "authorized seller of poisons"—that is, chemist—and also from wholesale or manufacturing firms "for the purpose of his profession." Written orders signed by medical practitioners are only necessary for the purchase of substances in the First Schedule. Alternatively, the practitioner may attend at the premises of the seller and obtain a substance in the First Schedule by signing the Poisons Register. In an emergency a written order is unnecessary if an undertaking is given that such an order will be furnished within the next twenty-four hours. Failure to furnish an order promised in these circumstances is an offence against the Rules. A provision which goes some small way to relieve medical practitioners from the receipt of unwanted samples is that requiring the supplier to have first received a written order before he supplies a sample of a substance included in the First Schedule.

[1] *British Medical Journal*, June 22nd, 1935, p. 1269.

Medical practitioners may supply medicines containing poisons to their patients without keeping records except for those medicines which contain a sufficient proportion of poison to come within the First Schedule. When these are supplied, on that day or on the next following day there must be entered in a book the date of the supply, the ingredients of the medicine, and the quantity of it, together with the name of the person to whom it was supplied. A provision which is new to the law is that a medicine containing a poison supplied by a medical practitioner must be labelled with his name and address. If it is an embrocation, liniment, lotion, liquid antiseptic or other medicine for external application and if it contains a poison the container must be labelled with the name of the article (that is, embrocation, liniment, etc.) and "Not To Be Taken Internally."

POISONS IN THE THIRD SCHEDULE

As was anticipated, certain poisons have been scheduled as poisons to be supplied to the public only by medical practitioners or upon their prescription. They are grouped in the Third Schedule, and include barbituric acid and its derivatives, the nitrophenol group, phenylcinchoninic acid and its derivatives, and the sulphonal group. When writing a prescription for these poisons the prescriber must see that it contains the following particulars:

1. His signature.
2. The date, written by him.
3. His address (which is not required on N.H.I. or local authorities' prescriptions).
4. The patient's name and address.
5. The total amount of the medicine.
6. The dose.

These prescriptions may be dispensed once only unless the prescriber directs that they may be dispensed a certain number of times or at certain intervals.

A provision is made in the Rules for the storage of poisons in shops, but the only requirement for the storage of poisons which applies to the surgery of a medical practitioner is that the container must be impervious to the poison, and sufficiently stout to prevent leakage from the ordinary risks of handling and transport. It may be observed that even for this elementary requirement there is no machinery for enforcement. An inspector of the Pharmaceutical Society has power at all reasonable times to enter any premises of a medical practitioner which is a shop and in which he has reasonable cause to suspect that a breach of the law has been committed in relation to certain poisons, but no inspector has a right of entry into any premises of a medical practitioner which is not a shop.

PROVISIONS APPLICABLE TO HOSPITALS

Certain provisions of the rules apply to hospitals. All medicines supplied for out-patients are to be supplied only by a medical practitioner or on and in accordance with a medical prescription. A medicine for an out-patient must be labelled with the name and address of the institution and (if it is not a medicine for internal treatment) with the word "poison." The supply of medicines for use within a hospital is regulated by a rule providing that where there is a separate pharmaceutical department medicines shall only be supplied from that department for use in the wards or other sections of the hospital upon a written order signed by a medical practitioner or by a sister or nurse in charge of the ward. This formality need not be observed in emergencies. Substances included in the First Schedule when stored in the wards must be stored in a cupboard reserved solely for the storage of poisons, and when sent out from the pharmaceutical department must bear an indication that they are to be stored in the poison cupboard. All places in which poisons are stored in institutions are to be inspected at regular intervals not exceeding three months by a pharmacist or by some other person appointed for the purpose by the governing body.

THE NEW WESTMINSTER

STONE-LAYING OF THE FIRST BUILDING

The Prince of Wales, on June 26th, laid the foundation stone of the nurses' home which is to form the first wing of the new Westminster Hospital. For just over a hundred years the hospital has stood in Broad Sanctuary, just opposite the Abbey towers. Its new site is rather further south, near Millbank, overlooking the Thames. It is intended that the nurses' home and the school of medicine shall form one block on the west side of the open space known as St. John's Gardens, while the main hospital building will be erected on the east side. The nurses' home will include forty bed-sitting rooms for sisters, two hundred bedrooms for nurses, a library, dining and common rooms, and a sick wing, a separate section for the accommodation of fifty cooks and maids, and the lecture and class rooms for the preliminary training school. On the flat roof there will be provision for outdoor recreation. The home is expected to be ready for occupation next year, and the medical school possibly in the same year; the building of the main hospital will then be begun, the whole to be in full working order by 1939. The total cost of the rebuilding scheme is in the neighbourhood of three-quarters of a million pounds.

THE WORK OF THE HOSPITAL

The stone-laying ceremony took place in a large marquee, and was attended by 1,500 friends and supporters of the hospital. Mr. Wolfe Barry, chairman of the Hospital Committee, in an address to the Prince, claimed for Westminster Hospital that it was the first in this country to be founded on the voluntary system. Since its establishment 220 years ago there had grown up more than a thousand such voluntary hospitals. Within them, in a spirit of healthy competition, though with little co-ordination, a most important pioneer work had been undertaken, new methods of treatment had been explored, and the practice of medicine and surgery brought to the highest scientific standard. It was obvious, however, that the time had come when these scattered units should co-operate in the further development of health services, in the treatment of patients, in the training of doctors and nurses, and in research. The plans of the new hospital were a practical example of the governors' determination to co-operate in every possible way. Here he spoke of the work of the hospital as the consulting medical centre for the Westminster City Council, its co-operation with the Middlesex County Council in dealing with many cases of early mental disease, and arrangements which were in contemplation with the London County Council and other bodies. A further claim for Westminster Hospital was that it was one of the first to provide private wards for patients of moderate means, which were named twelve years ago the Prince of Wales Wards. In the new hospital it was hoped largely to augment this provision.

THE PRINCE OF WALES'S SPEECH

The Prince was invited to lay the foundation stone by the matron of the hospital, Miss Edith Smith. In the course of his speech the Prince said that it must be admitted that the present building was out of date and cramped in every part, and its position, owing to increasing road traffic and noise, was, to say the least of it, unsatisfactory. He applauded the action of the governors in making a beginning by ensuring for the nursing staff more adequate and comfortable accommodation. The next important step would be the erection of the new medical school. Here again the governors had reason for giving the scheme priority over the main hospital building. The present school building was quite inadequate. In the new plans the medical school would be placed alongside the nurses' home, and from the point of view of economy it would be advantageous to start building the two at the same time, but before this could be done funds for the specific purpose of the school must be forthcoming. The new hospital was to be of moderate size, but more than adequate for the number of students for which the medical school was designed. It was proposed to embody all the modern ideas and requirements which could be gleaned from previous experience and from the study of recently constructed buildings both at home and abroad. It was hoped that it would be in every way a model up-to-date hospital, serving its purpose for many years to come and of assistance to other hospital authorities. Westminster would welcome any measure which might lead to a pooling of resources, whether in the treatment of the patients, the teaching of doctor and nurse, or the prosecution of scientific research.

After the stone had been laid and a prayer of dedication said by the Dean of Westminster, Lord Ullswater presented to His Royal Highness as a symbolical memento of the occasion a piece of the foundation stone in the form of a paper-weight, mounted with an ivory and silver handle. He mentioned that the stone was of marble from Derbyshire stone quarries.

Later it was announced that that great benefactor of hospitals, Mr. E. Meyerstein, who was present on the daïs, had handed to the chairman of the hospital a cheque for £10,000 for the medical school building.

Ireland

Position of Small Hospitals

The Drumcondra Hospital is still without a grant from the Hospitals Commission; moreover, according to a statement made by the Commission, no grant can be made until the general position of the Dublin hospitals has been considered and a scheme of reorganization has been decided upon. The secretary to the Drumcondra, at the recent annual meeting, expressed the hope that this would not be long delayed, as a new dispensary and out-patient department for the hospital were required. Dr. M. A. McKeever's report showed that 543 cases were treated at the hospital during the year, and that the total number of operations was 400, fifty-five being performed by the gynaecologist and sixty-seven by the laryngologist. The Dublin City medical officer of health, Dr. M. Russell, moving the adoption of the reports, spoke of tuberculosis caused by bad housing conditions, and said the hospital would have many patients suffering from that disease for some years to come. He thought Drumcondra was one of the first hospitals to recognize the open-air treatment of tuberculosis. It was no ordinary small hospital, for it had a medical staff second to none.

Child Welfare in Dublin

The committee's report of St. Ultan's Hospital, Dublin, recalls that the hospital was founded in 1919, when the infant mortality of Dublin was the highest of any capital in Europe—164 per 1,000. Recently the Minister for Public Health stated that there had been a satisfactory decline in infant mortality, and the committee trusted that the hospital contributed towards that end, working as it did in close co-operation with the Municipal Child Welfare Organization. The hospital started in a modest way with only two cots and £70 in cash; now there were fifty-two cots and an annual expenditure of about £4,000. With a view to future developments the Board had a spacious site in the vicinity of the hospital, upon which it was intended to build an extension. Dr. Alice Barry, moving the adoption of the report at the annual meeting, said that the hospital was doing excellent work, but it was regrettable that a number of babies died in hospital because they came in so late and so far gone that nothing could be done for them. The mothers did not bring them in time to be treated in the dispensary for such ailments as whooping-cough, tuberculosis, diphtheria, etc. In the sixteen years of the hospital's existence the death rate of infants had been reduced by half.

Scotland

Scottish University Graduation Ceremonies

Among those upon whom the honorary degree of LL.D. was conferred at the Edinburgh University graduation on June 28th was Dr. John Donald Pollock. The Dean of the Faculty of Law, in presenting him for the degree, said that Dr. Pollock, after graduating at Edinburgh in 1892, practised in London, where he designed and fitted out the original installation for electrical and *x*-ray treatment at the London Cancer Hospital. Throughout the war he rendered service in the Royal Naval Reserve of medical officers, and on its termination he set on foot the organization of Sea Scouts of the Forth, and bore a substantial share in running a training ship at Leith which had passed hundreds of young lads into the various services. He had inaugurated the large-scale production of liquid oxygen ; this had resulted in halving the price of liquid oxygen and greatly increasing the range of its technical uses. It was largely his initiative and enterprise that had made possible the herculean undertaking of raising some of the more deeply sunken German warships from the depths of Scapa Flow.

Among the eight recipients of the honorary LL.D. at St. Andrews University were two members of the medical profession. Professor Carl Hamilton Browning, F.R.S., Gardiner Professor of Bacteriology in the University of Glasgow, was introduced as one who fulfilled Galen's saying that the best physician was also a philosopher, and who, after having worked with Ehrlich in Frankfurt and taught in his own University of Glasgow and then in London, had become one of the most noted research workers in the obscure fields of immunology and chemotherapy. Sir John Boyd Orr, F.R.S., director of the Rowett Institute, Aberdeen, was introduced as having given many arduous years to warfare against the malnutrition which was the foe of all mankind. He had investigated Nature's inviolable laws and had brought health to many who otherwise would have been weakly and sick.

Problems of Mental and Physical Defect

Speaking at the sixteenth biennial Conference of the National Special Schools Union, which was held at Edinburgh on June 21st and 22nd, Dr. G. J. Linklater, school medical officer for Edinburgh, said that not sufficient was done at the present time for children who were incapacitated by rheumatic affections. Hospital accommodation could not be provided and was not really necessary for the subacute cases, and for some time a project had been under consideration to ask the municipality to make institutional provision for such children, where rest, treatment, and suitable education could be ensured. Mr. D. Kennedy Fraser, psychologist to Glasgow Education Committee, said that children who were transferred to the special schools had already proved failures in the ordinary schools, and some of them did not progress more satisfactorily when they were transferred. It might be said, however, that after leaving school one-third ultimately succeeded in some sphere of life ; another one-third could do something for themselves under supervision ; while only about one-third required permanent control or segregation. As to those cases which needed some after-care, this was much more effective when it was based upon special school training. The most satisfactory type of school, in his opinion, was that which combined training for both physical and mental defectives. Professor Drever of Edinburgh University believed that the present system in regard to special schools was wrong, for he did not think that segregation of children under a medical certificate could be justified from a social point of view. A very important distinction had recently been drawn between the retarded child and the mentally defective one, and it was a pity that this distinction had not been drawn earlier. Dr. Douglas Guthrie, speaking on the aims and scope of the speech clinic, thought that about 3 per cent. of all school children suffered from defective speech, and if minor defects were included the number was still higher. Preventive methods might well be used at a much earlier age. Many defects of speech were common, but could be easily corrected by a teacher or parent of average intelligence. There still remained, however, a number of cases in which special treatment was essential, and of these stutterers formed the bulk ; such cases might readily be treated at speech clinics.

Mental Defect and Juvenile Delinquency

On the second day of the conference Mr. James Carson, Superintendent of Rossie Farm School, Montrose, spoke on the relation of mental defect to juvenile delinquency. He said that large sums were being spent for the prevention and punishment of crime, but the adult criminal was the offspring of the juvenile delinquent. These children, who might not be obviously mentally defective, could never quite keep pace with the rest of their class. They fell gradually further behind, became increasingly retarded educationally, lost interest in work, became mischievous, and were generally beyond the control of their parents. They finished their school careers as non-qualifiers and had difficulty in finding employment, and then they got into trouble with the police and their real weakness was revealed. Some of these children were eventually committed to approved schools, formerly known as reformatories, and as a result many managed fairly successfully in after-life. Many, however, were allowed to drift along until they were too old for committal to an approved school, and they then became habitual criminals, unemployables, and general social inefficients. Too much reliance should not be put upon mental tests, and these did not supersede an ordinary medical examination, but most important of all was close personal observation over an extended period of time. The solution of the problem of the defective delinquent was to be found in (1) early recognition, (2) a training best suited to needs and capacities, and (3) careful placing under supervision in the employment for which he appeared best fitted. Unfortunately it was only after a boy had committed a crime that he was sent to a school, and bad habits had often been formed or he had entered on a career of crime. Therefore, every child found to be below the average of intelligence should be kept under observation throughout his school life. The speaker particularly recommended farm schools and farm colonies, where mentally backward children found congenial and interesting work.

Board of Control

The King has approved the appointment of Miss Kate Fraser, M.D., Ch.B., D.P.H., to be a Commissioner of the General Board of Control for Scotland in the room of Dr. H. C. Marr, who will retire under the age limit on October 11th. Dr. Fraser is at present a deputy commissioner of the Board, and was formerly assistant medical officer to the Crichton Royal Mental Hospital, Dumfries.

Chair of Physiology at St. Andrews

At a meeting of St. Andrews University Court on June 22nd, Dr. Robert Campbell Garry of the Rowett Research Institute, Aberdeen, was appointed to the vacant chair of physiology in University College, Dundee. Dr. Garry graduated M.B., Ch.B. with first-class honours at Glasgow University in 1922, being then awarded the Brunton memorial prize as the most distinguished medical graduate of the year. He had engaged in research in the Physiology Institute of Glasgow University, and in the autumn of 1924 was appointed assistant to the late Professor Noel Paton. In 1925 he became Muirhead demonstrator in experimental physiology under Professor E. P. Cathcart, and later did some research at the University of Freiburg, University College, London, and Leeds Medical School. In 1933 he took the degree of D.Sc. for research in physiology, and in 1934 was appointed to the staff of the Rowett Research Institute at Aberdeen.

Conference of Scottish Approved Societies

At a Scottish Conference of Friendly and Approved Societies, held in Edinburgh on June 22nd, Miss Muriel Ritson of the Department of Health for Scotland said that the income from health insurance contributions in 1934 had been £2,631,000 as against £2,515,000 in 1933. The number of days lost among the insured population in Scotland through sickness still stood at the amazing figure of 16,870,515, which was roughly ten days of sickness per insured person during the year. This figure, however, had been appreciably lower than that for the year ending June, 1933. The high average duration of incapacity in certain areas of Scotland still gave the Department much concern, and it was hoped to make an investigation into the causes of this. In 1934 there had been 17,000 fewer references to regional medical officers than in 1932.

Home Relief of Incurables

At the annual meeting of the Royal Society for Home Relief to Incurables, held in the Council Chambers, Edinburgh, on June 17th, the chairman, Bailie Raithby, stated that during the past year a sum of £5,053 has been distributed among 450 beneficiaries, exclusive of a special fund for cancer. The revenue of the Society for 1934 had been £6,835, and the expenditure £5,837. In addition to this the sum distributed by the Dunlop Cancer Fund had been £2,194. Professor John Fraser said that for most people to whom ill-health came there was the comfort that presently the shadows would pass away, but there were some who knew that through no fault of their own the die was irrevocably cast and that health could never be regained. It was a great thing that such a society as this should exist to lighten the burden. There was a certain amount of apprehension in this year's report that, while the claims were increasing, income had not risen to a commensurate degree ; but he felt that if there was any suspicion that activities would be restricted by lack of funds, the society had only to issue an appeal in order to receive a generous response.

England and Wales

Maternal Mortality Conference

A conference called by the Maternal Mortality Committee was held on June 25th, at the Livingstone Hall, London, S.W., to consider the policy which had been drawn up by that committee. The chair was taken by Lady Denman. The morning session was opened by Dame Janet Campbell, who explained the policy, and the afternoon session by Dr. Andrew Topping, who dealt with the scheme which he had initiated at Rochdale, by which the maternal mortality rate there had been so appreciably reduced.[1] Dr. Lionel Picton dealt with the Cheshire antenatal scheme, and Lady Williams with the scheme in the Rhondda Valley. The speakers included Mrs. Baldwin, who urged the initiation of local committees to popularize ante-natal clinics ; Dr. John Fairbairn, President of the British College of Obstetricians and Gynaecologists, who commended the policy as a whole ; Mr. Eardley Holland, who emphasized the importance of a post-graduate training for doctors ; Professor James Young of the British Post-Graduate Medical School ; Dr. Harold Waller of the Royal College of St. Katherine, who urged that the care of mother and baby should everywhere be the responsibility of one and the same public health authority, and also emphasized the importance of a post-graduate training ; and Miss Gregory of the British Hospital for Mothers and Babies, who dealt with the training of midwives. A number of suggestions were made for the consideration of the committee, including the provision of ambulances and the value of milk for expectant and nursing mothers.

[1] *British Medical Journal*, February 16th, 1935, p. 304 ; February 23rd, p. 386.

The Maternal Mortality Committee's policy is officially set out as follows:

1. The institution in each area of a maternity service which, while paying attention to the varying needs and character of different localities, shall enable all women to obtain adequate ante-natal, natal, and post-natal care. To this end special attention shall be paid to the following points: (*a*) Ante-natal, natal, and post-natal care should be under the same medical guidance. (*b*) Midwifery practice should be limited to doctors with post-graduate training and practice in obstetrics. (*c*) Local schemes should be encouraged which would enable private practitioners so equipped to take part in the maternity services. (*d*) The need of skilled obstetricians for all complicated cases. (*e*) The extension of the period of midwives' training to two years. (*f*) The advantage of a service of salaried midwives working under the direction of a hospital, a nursing association, or the local authority. (*g*) The provision of a sufficiency of maternity beds in properly equipped hospitals for complicated cases and for patients whose condition or home circumstances entail potential risk. (*h*) An improved domiciliary service for women attended by a doctor or midwife ; such service to provide trained maternity nursing. (*i*) An adequate after-care service which is seldom, if at all, provided in maternity and child welfare schemes. Its object should be to ensure that the period of hospital and domiciliary care is sufficient for the mother's full restoration to health, and that the infant's early hold on life is secure. To this end the whole of the arrangements for the care of mother and baby should everywhere be the responsibility of one and the same public health authority.

2. Since we have not yet succeeded in applying effectively existing knowledge to the reduction either of maternal morbidity and mortality, or of the high death rate of newborn infants, it is desirable that there should be established carefully planned model schemes in selected urban and rural districts. As part of the work thus undertaken, or as a separate task, an investigation is urgently needed of the extent to which childbirth is followed by disability. A special grant from public funds should be available for the encouragement of such schemes.

3. Compulsory immediate confidential notification to the medical officer of health of the local supervising authority of all deaths occurring during pregnancy, and of all those following or associated with childbirth and abortion.

Middlesex Hospital: Dinner to Mr. Webb-Johnson

On June 27th Mr. A. E. Webb-Johnson, C.B.E., D.S.O., F.R.C.S., was entertained at a complimentary dinner at Claridges Hotel by members of the Board, medical staff, and the Medical School of the Middlesex Hospital. The dinner was given on the occasion of the completion of the new Middlesex Hospital to mark his colleagues' appreciation of Mr. Webb-Johnson's work in connexion with its rebuilding during the last ten years. He has been a member of the Rebuilding Committee and chairman of the Plans Committee throughout, and in addition to this work has been responsible, directly and indirectly, for raising close upon £500,000 of the million and a quarter which the whole scheme has cost. H.R.H. Prince Arthur of Connaught, chairman of the hospital, presided at the dinner, and during the evening handed to Mr. Webb-Johnson a piece of plate as a memento. Seventy-five members of the Board and staff were present.

A Bishop on Faith Healing

The Bishop of Winchester (Dr. Cyril Garbett), addressing his diocesan conference on June 26th, said that modern methods of mental healing taught that the source of many diseases was mental rather than physical, but many claims advanced by those who believed in spiritual healing were justified neither by Christian teaching nor by actual results, nor did careful investigation confirm recent claims of remarkable cures at missions of healing. That some relief had often come to neurotic cases at these missions must be admitted, but if the Church claimed that through its ministers or endowed laymen it could heal the sick it might arouse in many minds resentment against religion itself. "I feel indignation when I hear a few alleged cures by some spiritual healer widely advertised as the work of God, while the restoration to health of untold numbers through the discoveries and skill of medical science is ignored as something independent of the goodness and guidance of God."

CORRESPONDENCE

The B.M.A. and the Society of Medical Officers of Health

SIR,—In view of the present activities of a medical body which is for the first time claiming to represent the interests of the public health medical officers and to substitute a new salaries scale for negotiation with local authorities, the council of the Society of Medical Officers of Health feel that the time is opportune to remind members of the public health service of the principles for which this society stands, and of the advantages which have been effected over a long period of years by the society's instigation and the powerful and generous aid of the British Medical Association. We are therefore asking the courtesy of your space for a brief restatement of the policy which we believe to have the approval of the public health service.

First, so far as the public health and preventive medicine are concerned, this society has had as its first object the advancement of knowledge and the exchange of views between colleagues towards securing the practical application of that knowledge. Secondly, the society has aimed at improving the conditions of service of public health medical officers, believing that such action results in raising both the quality of the personnel and the standard of the work carried out by the public health service. The society has always insisted, as a scientific body and, moreover, one drawing its membership from officials of local authorities, that it has no concern with political arguments. Its integrity in this respect has been recognized in the fact that it has always been consulted by Government departments, associations of local authorities, and so on, as being ready to give unbiased and reasoned guidance on public health questions.

With regard to the British Medical Association, the society has long recognized that it is both more proper and more effectual for medico-political action to be undertaken on behalf of the public health medical service by the larger association representative of the medical profession as a whole. The Association, like the society, has no concern with the views of political parties in the ordinary sense. Among so-called medico-political questions, that of salaries has been predominant since the first scale was adopted in 1925. Great advances were made under the old scale, and the new Memorandum of Recommendations, drawn up in 1929 and agreed to by the majority of associations of local authorities, has improved the financial position of hundreds of members of the public health medical service.

A scheme of co-operation between the society and the B.M.A. has been in existence to the satisfaction and advantage of both bodies for over twelve years. The council of this society therefore wish to reaffirm their former policy and to draw the especial attention of public health medical officers to the leading article which appeared on page 1127 of the *Journal* of June 1st. They feel that it is of the utmost importance that both public health medical officers and local authorities should not be confused by the arbitrary action of another medical body in putting forward a new salaries scale and a new method of negotiation, the adoption of which is being urged upon medical men and local authorities on grounds not disassociated from politics. The council believe that it is unnecessary to appeal to the loyalty of the Fellows of this society towards securing that our present objects and methods of action are faithfully adhered to.—We are, etc.,

R. VEITCH CLARK, President.
G. L. C. ELLISTON, Executive Secretary.

The Society of Medical Officers of Health, 1, Thornhaugh Street, London, W.C., June 29th.

"Clean" and "Safe" Milk

SIR,—The terms "cleanliness" and "safety" as applied to the milk supply are by no means synonymous; and in view of the increased consumption of milk which will no doubt follow the present advertising campaign and the introduction of milk rations for school children, a clear recognition of the distinction between the terms "clean" and "safe" is necessary if protection of the public is to be secured. No one will dispute that milk retailed for public consumption should be "clean"—that is, free from dirt—and, also, that it should be unadulterated. But this is not enough. A third factor is necessary: the milk must be "safe"—that is, free from the risk of communicable disease.

There is abundant evidence that through the agency of raw milk various outbreaks of acute infections have been caused, while the recent report issued by the Cattle Diseases Committee states that "it is to infection from milk . . . that most of the bovine tuberculosis in human beings is attributable," and that the number of deaths from this disease per annum "is more likely to exceed than to fall short of 2,500." On the other hand, there is ample evidence of the protective value of pasteurization, and of the claim that this process leaves the nutritive qualities of milk substantially unimpaired.

The Dairy Research Board of the U.S.A., after an analysis of epidemics of acute infections including 1,278 cases, concludes: "Disease is spread by milk only in areas which do not enforce pasteurization."[1] The *Canadian Public Health Journal* quotes the experience of an examination in districts outside of Toronto of forty-five patients (under 14 years of age) suffering from bovine tuberculosis and records that all "had consumed raw milk. In Toronto itself, where 99.8 per cent. of the milk is pasteurized, not a single case of bovine tuberculosis has been detected."[2]

In addition, there is the evidence of our own Ministry of Health: "The pasteurization of milk . . . carries with it the immense advantage of making milk safe for the consumer without any appreciable impairment of its nutritive properties." (Report of Chief Medical Officer for 1932—published 1933.)

Efforts, whether official or made by the members of the milk-producing industry, to provide the public with "clean" milk merit appreciation. There remains the demand for "safe" milk, and this can be satisfied only when pasteurization as a protective process (or, failing this, boiling the milk) is generally adopted. When disease *can* be prevented it *ought* to be prevented, and, fortunately, in reference to milk, safety lies within our reach.—I am, etc.,

C. O. HAWTHORNE, M.D., Chairman of Council, People's League of Health.

London, W.1, July 1st.

[1] *Lancet*, February 23rd, 1935.
[2] *British Medical Journal*, April 21st, 1934.

Atelectatic or Compensatory Bronchiectasis

SIR,—It is gratifying that the editorial reference in the *Journal* of June 8th, which you so generously made to my article on "Atelectatic or Compensatory Bronchiectasis" appearing in the April issue of the *Archives of Disease in Childhood*, has called forth some comment in your correspondence columns, for the question is one which deserves the fullest discussion.

I was particularly interested to learn that Dr. Peter Kerley (*Journal*, June 22nd, p. 1290) had seen post-operative pulmonary collapse in the adult cause the sharply defined triangular basal shadow, for I have consulted several radiologists of wide experience, and they all informed me that they had never seen in this condition the picture which seems to be the rule in spontaneous pulmonary collapse in the child. One must admit, of

course, that there seems no apparent reason why age should affect the radiological appearances. I quite agree with Dr. Kerley that such a shadow, when due to collapse, probably indicates that the mischief is limited to the lower lobe, but at the same time I should like to say that in my experience collapse of the lower lobe has always been accompanied by symptoms, the most striking of which is a most inveterate and severe cough.

It is unfortunate that Dr. Kerley did not consult the article itself, for, if he had, I do not think that he would have made the statement that " there is no real evidence in favour of collapse causing or predisposing to bronchiectasis." Two of the three cases which I described and illustrated by pictures of the bronchial tree as revealed by the injection of lipiodol before and after recovery do certainly show that atelectasis and bronchiectasis may be very definitely related, and, since the bronchial dilatation disappeared after re-expansion of the lung, they surely warrant the conclusion that the latter was dependent on the former. Unfortunately, in the annotation no reference was made to the disappearance of the bronchiectatic dilatation. This, to my mind, was a very important, if not the really important, feature in the study of the cases, and, moreover, it is an occurrence which, so far as I am aware, has not previously been reported.

If Dr. Kerley had quoted correctly from the annotation in the *British Medical Journal* there might be something in his criticism of the criterion which I laid down as essential for ascribing a particular shadow in the radiogram to collapse of the lung. But, unfortunately for his argument, he credits not only me but also the writer of the annotation with a phraseology that neither of us employed. The phrase used in your annotation, and in the original article as well, was that " the only criterion by which it can be decided that a particular shadow is caused by collapse of the lung, at least during life, is the ability to cause its *rapid and complete disappearance* by reinflation," and not that " disappearance of the triangular opacity by reinflation is the only criterion by which it can be decided that a particular shadow in the skiagram is caused by collapse," as Dr. Kerley paraphrased it and at the same time placed it within quotation marks. In repeating the correct phrase I have italicized the important words for Dr. Kerley's benefit, because I don't suppose that even he would assert that an encysted pleurisy would *immediately disappear* on attempts at reinflation of the lung. Nor can I imagine that he really intends to suggest that the intrathecal injection of lipiodol will demonstrate whether the shrinkage of the lower lobe is due to atelectasis or is consequent on fibrosis.—I am, etc.,

London, W.1, June 26th. LEONARD FINDLAY.

Resistance to Insulin

SIR,—I cordially agree with Dr. Leyton (*Journal*, June 22nd, p. 1288) when he insists on the extreme rarity of insulin-resisting diabetes. The case of Miss C., which he quotes, I recognize as having been under my care in the earlier stages and at the termination of her illness, and as she was very exceptional I am prompted to add a few details about her.

While it is true that she failed to react to insulin, in that the blood sugar and urine never became normal, it is not quite correct to say that there was no response at all. She became obese, did not feel well, and twice had alarming hypoglycaemic attacks after exercise. Insulin had apparently upset the mechanism regulating the storage of carbohydrate and its utilization by the muscle. Later she failed to react to insulin at all, and in the terminal coma massive doses had no effect, and appeared to make her worse. As there was a history of meningitis in childhood, it is probable that the nervous system and not the pancreas was the system primarily at fault.

In my own experience I have yet to meet a case of diabetes in which there was no response to insulin whatever, but I have records of many in which insulin either did not improve the clinical condition or made it worse. Many mechanisms may be responsible for the production of a hyperglycaemia, and if the cause be not pancreatic it does not seem reasonable to expect that insulin would invariably be helpful. The usual effect of insulin is to lower the blood sugar ; but it may manifest itself by increased storage, leading to obesity, or by interfering with the supply of sugar to the muscles. In this case its effect will only be seen after exertion. As insulin will lower the blood sugar in the vast majority of diabetics, this particular effect is apt to be taken as the criterion of success. Many patients, however, feel better when their blood sugar is considerably above normal, and in them its depression may be a toxicological rather than a therapeutic measure.

The distinction is of great practical importance. There are many types of diabetes, and successful treatment is not necessarily the attainment of an arbitrary blood sugar figure—the optimum level of which it is impossible to assess for every case—but whether that case is better or worse.—I am, etc.,

Manchester, June 30th. T. H. OLIVER.

Benedict's Qualitative Test

SIR,—Dr. Izod Bennett questions the superiority of Benedict's qualitative test over Fehling's test on several grounds, few of which, in my opinion, can be considered as tenable.

1. *Delicacy of the Tests.*—He states that Fehling's solution will often give a positive result with dilutions of sugar so small that Benedict's test is negative The explanation of this is not the superior delicacy of Fehling's test, but the fact that only eight drops of urine are added to the reagent in carrying out Benedict's test, whereas an indefinite volume—generally much more than eight drops—is employed in Fehling's test. Where equal volumes of urine are employed in the two tests Benedict's will always be found to be the more sensitive. For example, one drop (0.05 c.cm.) of a 0.1 per cent. solution of glucose will, on boiling with 1 c.cm. Benedict's, produce a just perceptible reduction (faint greenish opalescence), but will produce no change with 1 c.cm. Fehling's solution, which requires two drops of the glucose solution to show just perceptible reduction (faint reddish opalescence). For clinical purposes, however, the difference in sensitivity between the two tests is not important. As ordinarily carried out Benedict's test will detect 0.08 per cent. glucose (Plimmer*) ; Fehling's test may, on account of the larger volume of urine used, detect glucose in a slightly smaller concentration, but is also liable —for the same reason—to show reduction with many non-glucose substances normally present in urine. In any case, the value of detecting glucose in urine in a concentration of less than 0.08 per cent. is questionable, since the diagnosis of diabetes rests finally on blood sugar determinations, and may even be made in the absence of glycosuria.

2. *Information Provided by the Tests.*—It is, of course, admitted that Fehling's test is the more simple and rapid of the two, and, as Dr. Bennett remarks, is to be preferred for the " ordinary " patient—that is, the patient whose urine is being examined in the course of the usual routine physical examination.† For the known diabetic, however, or the patient whose urine is positive with Fehling's test, an examination of the urine with Benedict's reagent is of great value, because of the quantitative basis of the reaction.

The information provided by Benedict's qualitative test as hitherto carried out is limited, however, since it crudely divides urines into those containing under 2 per cent.

* Plimmer: *Practical Organic and Biochemistry*, 1918, p. 191.

† Equal simplicity can, however, be obtained by performing a rough Benedict's test—that is, by using Benedict's reagent in the same way as Fehling's reagent ; a little longer heating is required (two minutes).

glucose and those containing over 2 per cent., giving no further information as to the latter. My modification greatly enhances the value of the test, since it enables a precise determination of a urine containing glucose up to 10 per cent. The simplicity of my modification (particularly Method 2) is such that there can be no reason why an estimation of glucose should not invariably be carried out by the clinician whenever glucose is found to be present in the urine. The polarimeter may be more accurate than my modification: I have not compared them. It is hardly a suitable instrument for the ordinary clinician, who, with the aid of my procedure, can now readily determine the extent of glucose excretion in a case of glycosuria.—I am, etc.,

London, W.1, June 27th. J. FINE.

Malignancy of Vesicular Moles

SIR,—In the *Journal* of April 6th, 1935, there is published an account of the proceedings of the Obstetrical and Gynaecological Section of the Royal Society of Medicine in which Mr. Alan Brew gave a survey of cases of hydatidiform mole. In the discussion which followed the question of the malignancy of these abnormal pregnancies was raised, and Professor James Young referred to a case reported by James Miller of pulmonary infarction by chorionic epithelia. May I direct the attention of those interested to a case reported to the same Section of the Royal Society of Medicine by J. Escourt Hughes and published in the Society's *Proceedings* of June, 1930.

This case was under my care in the Adelaide Hospital, the patient, a healthy woman of 24 years, dying in a most tragic and dramatic manner of sudden and overwhelming multiple infarctions of her lungs by multinucleated masses of syncytium. In a comment which I contributed to the report I expressed the opinion that the malignancy of vesicular mole appears to depend upon the proportion between the epithelial and primitive mesoblastic content of the villi: the greater the epithelial content the greater the malignancy. In the Adelaide Hospital Pathological Museum there is a specimen from a case of hydatidiform mole in which the abnormal villi have penetrated the uterine wall, permitting the escape of the mole between the layers of the left broad ligament.

To my mind there is no doubt of the malignancy of some cases of vesicular mole, apart from true chorionic cancer, which makes possible extensive local invasions of the uterine wall with associated penetration of maternal vascular system.—I am, etc.,

J. B. DAWSON,
Professor of Obstetrics and Gynaecology, University of Otago.

Dunedin, New Zealand, May 17th.

Treatment of Post-partum Haemorrhage

SIR,—In the *Journal* of June 29th (p. 1317) Mr. W. F. Rawson has drawn attention to a useful method of administering pituitary extract in cases of severe post-partum haemorrhage—namely, direct intrauterine injection through the abdominal wall. He describes a case in which this method was used with good effect after previous failure of hypodermic injection of pituitary extract. This method of treatment has also been advocated by Professor Beckwith Whitehouse, who uses for the purpose 1 c.cm. of pitocin.

There is no doubt about the efficiency of intrauterine injection, and its presumptive superiority over ordinary intramuscular injection can perhaps be accounted for in two ways. (1) The uterus is in an extremely vascular condition; absorption is therefore unusually rapid, and the extract quickly passes into the blood stream to be redistributed to every muscle fibre of the uterus. (2) The local irritation and spasm caused by the injection may instantly initiate a wave of contraction, which spreads over the remainder of the uterus, much as an extrasystole of the heart can be produced by irritation of the myocardium. The method has, however, a disadvantage, for it is not always possible to be sure that the uterus is directly below the abdominal wall—especially if the patient is fat.

In such cases, if simpler methods have failed, there is much to commend the intravenous injection of a *small* dose of pituitary extract, or of the recently discovered quickly acting ergot alkaloid, ergometrine. Pituitary extract, when so administered, is, however, sometimes followed by alarming pallor and shock; for this reason it must be used with great caution, and a dose of 2 units should probably not be exceeded. Ergometrine, on the other hand, appears to be free from undesirable side effects when given intravenously in an effective dose. A prolonged uterine spasm is produced within one minute of the injection. Ampoules containing 0.125 mg. of the drug are now available, and are intended for intravenous administration: they are likely to prove a useful new means of treatment of post-partum haemorrhage.—I am, etc.,

British Post-Graduate Medical School, W.12, June 29th. CHASSAR MOIR.

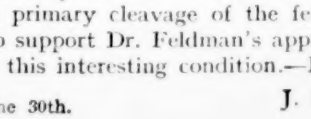
Visceral Transposition as a Mendelian Recessive

SIR,—I have thought for a long time that this condition might be recessive, and the fact that in both the sibships recorded by Dr. Feldman and Dr. Manson two or more children were affected strengthens my belief. I cannot, however, agree with Dr. Feldman (*Journal*, June 29th, p. 1340) that transposition of the viscera occurring in a single sibship, of which the parents are first cousins, proves conclusively that it is recessive, though I admit that it makes the supposition more probable. To settle the question it will be necessary to collect a long series of unselected cases of the abnormality and find out in what percentage of them the parents were first cousins. If this is high—10, 20, or 30 per cent.—then there would be no doubt that it is inherited as a recessive.—I am, etc.,

E. A. COCKAYNE, D.M., F.R.C.P.

London, W.1, June 29th.

SIR,—Although I have communicated privately with Dr. W. M. Feldman, giving him details of the family in which two cases of transposition of the viscera occurred, I think, in view of his very interesting contribution to the *Proceedings of the Royal Society of Medicine*, that I should state them publicly. In this family there is no consanguineous relationship between the parents. The father, who is alive, is very definite on that point. The pedigree is as follows:



There is a history of twinning in the father's family. Two sisters had twins. Although anatomists do not agree that there is any evidence of a relationship between twinning and transposition of the viscera, yet it might be worth while to look amongst such families for examples of this rare abnormality. Twinning is distinctly hereditary. Both conditions may be due to some factor or factors influencing the primary cleavage of the fertilized ovum. I should like to support Dr. Feldman's appeal for further information on this interesting condition.—I am, etc.,

Warrington, June 30th. J. S. MANSON.

Obstetric Disproportion

SIR,—I found very interesting the article on this subject by Mr. Christie Brown in the *British Medical Journal* of June 22nd.

I do not quite agree that patients in whom the true conjugate measures between three and a quarter and three and three-quarter inches must have Caesarean section. I had a patient like that when in India, an American lady, and she had been to three different doctors, who all said Caesarean section was inevitable. It was between the second and third months I saw her, and she was very keen not to have it. I said if she walked a great deal, and did not overeat, I thought it would be quite possible to deliver without. She went up to the hills and came down to the plains about a fortnight before her confinement. Labour began at 9 a.m., and I delivered a six-pound living baby at 11.30 a.m. with ease by forceps.

I heard of a case where the baby was born dead because of a partially dilated cervix. I had a case in which my matron, as I was finishing an operation, reported that the uterus was outside and the baby in; the cervix was protruding beyond the vulva four inches. I slit up both sides, delivered the baby easily by forceps, and then sutured the cervix and replaced it, and both did well.

But I have found in cases where the cervix was very rigid that by packing the vagina very tightly, with the patient under chloroform, and then giving an injection of morphine, the patient sleeps well; in six to eight hours the packing is expelled, and forceps can be applied easily, and the baby is living. I have not often had to do this, but in each case the baby was living and the mother did well.—I am, etc.,

London, S.E.13, June 24th. JANET M. C. GRAY.

SIR,—With reference to Mr. Christie Brown's interesting paper on this subject, I quite agree that a vaginal examination should be made during pregnancy in every case. In fact, one might go further and say that it is advisable to examine patients both in the early months of pregnancy and during the last few weeks. I do not, however, perform an internal pelvimetry of any description unless there is some suggestion of pelvic deformity.

A few years ago I brought out a direct reading pelvimeter, which was described in your columns (February 23rd, 1924, p. 329), and also in my book. I may say that the instrument is simple to use and permits an accurate measurement to be taken of the true conjugate if and when such is required.—I am, etc.,

Londonderry, June 26th. R. E. TOTTENHAM.

Facts and Fancies in Psychotherapy

SIR,—I have read with much interest the address delivered at B.M.A. House, Edinburgh, on May 17th, by Dr. Crichton-Miller, under the above title, as published in the *Journal* of June 15th, and would ask your indulgence in allowing me to make the following observations.

I note that Dr. Crichton-Miller states quite early in his address that a "semi-official specialty has developed to meet the demand for cases in which the doctors of to-day are rarely interested." Without reading further, I refer to the Report of Council of the B.M.A. (in the *Supplement* to the *Journal* of April 20th, 1935), where I find paragraph 86, which refers to a report by a committee dealing with "the Relationship of the Private Practitioner to the Treatment of Mental Disability." This committee, I am informed, has been investigating this "relationship" for the past two years, although I have heard nothing of it until the perusal of the Report of the Council above mentioned. On obtaining a copy of this Report one finds how this "semi-official specialist" is to be reproduced. The whole-time salaried men, who naturally have most experience in dealing with cases of mental disorder in its widest sense, are to be excluded (if possible) from holding any appointment in connexion with "clinics," or from doing any consulting work. These whole-time officials are expected to give every help to those who intend to set up as "specialists," however, and to give them right of entry to the hospitals under their control for "courses of instruction," but no mention is made as to such persons themselves holding "whole-time" appointments in mental hospitals! I have often tried to visualize the future with respect to mental hospitals in this country. Once more I refer to matter already published and this time to the meeting of the Royal Medico-Psychological Association in July, 1934. I find an address entitled "Modern Psychiatry and Mental Hospitals," published in the *Journal of Mental Science* of January, 1935. Therein Dr. Yellowlees states that "there is definitely spreading to the able, sincere, and enthusiastic junior workers in this specialty the idea that the less they have to do with mental hospitals the better." He further makes the pertinent statement that "these are the men who consider that they have taken the 'I' out of G.P.I.," and that a large proportion of the private consulting work in mental disease in London alone is done by persons who do not include in their qualifications one single week of residence in a mental hospital. It surprises me that such a statement as this should not have roused the members of the council of the Royal Medico-Psychological Association into activity, and that, so far as I am aware, nothing has been done to defend its members from this state of affairs.

Dr. Crichton-Miller is kind enough to admit that experience in a mental hospital should be essential, but disparages the value of this training and experience by saying that "one year is the limit of beneficial experience." Although I would suggest three years as the minimum which, in my opinion, would suffice, I would be prepared to accept his suggested twelve months as a "compromise" if Dr. Crichton-Miller would likewise support my contention that a diploma in psychological medicine should not be granted without such qualification. With all due respect I venture to suggest that the Report on the Relationship of the Private Practitioner to the Treatment of Mental Disability specifies no qualifications for future specialists in this branch of medicine, and that the public, even if not the whole-time officer, needs to be protected. In the course of his address Dr. Crichton-Miller states that "working outside the mental hospital it is possible to observe the cases that improve." This statement does not impress me as it might do some people, for it must be just as easy to observe the cases that improve "within" the mental hospital as those who improve who are not so admitted.

Many cases sent there improve under appropriate treatment, although it may be the object of those who have not held an appointment in such a hospital to try to belittle our efforts. Even such treatment as is included under that of the "metabolist" by Dr. Crichton-Miller would receive its due consideration within the walls of a mental hospital. Indeed, if statistics were considered throughout the country, I do not think it would be underestimating the fact if I stated that 30 per cent. of the patients relegated to mental hospitals by the private practitioners as "hopeless" cases recover under appropriate treatment. But mental clinics at present only exist as out-patient clinics in most parts of the country. If such cases, therefore, were sent to mental hospitals, where full staffs of honorary consultants are now available, a full and thorough

investigation would be made. Such can now be admitted freely as "voluntary patients" if properly advised.

I sympathize with the young graduates of both sexes who, "technically well equipped, have never tackled the labour single-handed," with regard to whom Dr. Crichton-Miller refers, and hope that these are not those whom the public are to look to as "specialists" in mental disorders in the future. Surely the men and women who have served their apprenticeship, who have learned "things not written in books," as they can only do by obtaining resident appointments in mental hospitals or similar institutions, deserve some recognition, and are not to be put into the waste-paper basket without some protest.

I note that Dr. Crichton-Miller, in part of his address, mentions the need for "co-operation." I therefore venture to suggest that this co-operation might be extended to those I have just mentioned, who have not evaded the donkey work, and can at any rate add a mental hospital appointment to their qualifications. Others who have ventured to enter into this correspondence so far have mostly concerned themselves with "fancies" and theories! I personally feel that it would be as well for some of us to look at the "facts" and to the future of mental hospitals before it is too late.—I am, etc.,

RICHARD EAGER,
Medical Superintendent.

The Hospital, Exminster, June 23rd.

SIR,—Dr. Crichton-Miller has well described the natural bias of the neurologist, the alienist, the "metabolist," and the psychotherapist of various brands. Nevertheless, doctors belonging to all these categories are every day "getting good results" with cases of nerves or "maladjustment." Why so? Because many of them are much more than mere specialists, and possess also common sense and a practical knowledge of human nature. This, however, is a very different thing from claiming that the particular point of view for which any of these doctors officially stands should be allowed to lord it over the whole field of mental disability. Dr. Crichton-Miller has indicated the qualities as well as the defects of each of these points of view, and his claim for a broad and inclusive approach ought to meet with general approval. But in very many cases this all-sided treatment, to be effective, must also be continuous; otherwise we secure at best palliation and not cure. "The time factor," says Dr. Crichton-Miller, "is at the root of most of the problems of psychotherapeutic clinics." With the staffs available in big institutions, it is only a proportion of the patients to whom the doctors can give adequate service (I am speaking of curable cases, not insane people). It will, in fact, become more and more evident in the future that psychotherapists are faced with the same difficulty as educationists—namely, that of "too big classes."

What more, then, can we do in the meantime? What has Dr. Crichton-Miller at the back of his mind? In effect he would appear to desire the return of the old general practitioner, or something like him, if these nervous cases are to be satisfactorily treated. For the old general practitioner was the ideal synthetizer of physical, psychological, and social factors; his wisdom was, however, based essentially on practical experience with living people, and only secondarily on books and lectures. The modern endemic of "nerves" in Western civilization is really but a special aspect of the general sagging of common sense and breadth of view among a herded and standardized public. Unfortunately "our profession" has caught the infection too, and it is a similar failure of vision and of practical clinical experience that accounts for its impotence in envisaging or dealing prophylactically with the problem of nerves. Official medicine has, in fact, capitulated far too readily to the spirit of the times, which more and more replaces man-power by machinery (administrative and other).

Meanwhile doctors who, while professing various specialties, yet also possess the general practitioner outlook, are dealing successfully with many really difficult cases of "psychoneurotic disability." Why should they not be encouraged to go on?—I am, etc.,

A. J. BROCK.

North Queensferry, Fife, June 24th.

Treatment of Hammer-toe

SIR,—In the treatment of hammer-toe it is most important to recognize that the first point to overcome in this deformity is the dorsal flexion of the metatarso-phalangeal joint. Not only ligaments and capsule require free division, but in many instances the dorsal flexor tendons require lengthening. Subsequent division of the plantar portion of the interphalangeal joint or joint capsule will relieve most cases. Only in very severe congenital hammer-toe have I found it necessary to deal with the bones—cases that have the terminal phalanx doubled under the second.—I am, etc.,

W. KENT HUGHES, M.B.Lond., M.R.C.S.

Melbourne, May 28th.

Development of Health Services

SIR,—Dr. E. Cameron-Murphy appears to suggest in his letter (June 29th, p. 1341) that the balance sheet of a nursing organization might be improved if his medical colleagues in the school medical and public health services were dismissed from their posts and replaced by nurses. His subsequent remarks indicate that he has very little knowledge of the functions of the various health services. The reforming zeal of Dr. Cameron-Murphy might perhaps be tempered by a few afternoons spent at a busy school clinic, but, of course, he would have to puzzle out a new remedy for that balance sheet!—I am, etc.,

PHILIP R. KEMP.

Edgbaston, Birmingham, July 1st.

A Medico-legal Conundrum

SIR,—A country G.P., who is afflicted with "second-sight," began to make inquiries, fourteen days ago, about a problem which did not then exist so far as he was concerned. He rang up his solicitor and inquired as to what would be the correct procedure were a doctor to be subpoenaed to attend in four different courts in four different places at the same time. Should he obey the first summons and inform the others that he could not attend? Should he ascertain which was the senior court and obey the summons of that court?

The solicitor was young, and did not know. Being a persistent fellow, the G.P. continued to make inquiries, both from solicitors and police. The courts suggested as examples were: the Court of Appeal, the Court of King's Bench, the Police Court, and the Coroner's Court. No one knew; but the legal luminaries almost to a man plumped for obeying the senior court, but were doubtful as to which this was: most of them thought that the Court of Appeal and Court of King's Bench would override the coroner. Every police officer voted for the Coroner's Court first.

The case of Jarndyce and Son *v.* Jarndyce United threatens to come before the Court of King's Bench some time this year: it has been impending, really impending, since February, but so far the witnesses, jurors, and others have only wasted two days sitting in the corridor, in spite of the spate of letters and telegrams that have been sent out to notify them that the case is really about to come on. On Sunday, June 23rd, the G.P. was called to a man

who had been drowned: on Monday he appeared at 9i Court of King's Bench to find, after some hours' waiting, that Jarndyce *v.* Jarndyce was being postponed until Tuesday or later, and while waiting in the corridor wondering whether this would clash with the forthcoming inquest, he was told by a policeman that his presence would be required on Tuesday or Wednesday to give evidence about an assault case before the local Bench of Magistrates.

The G.P. questioned a dozen barristers—every available barrister that he could find in the corridors—as to his position: none of them knew the answer, and, finally, one of them suggested that the authority who would know would be the Crown Office, to which the G.P. repaired. No definite solution of the problem was obtained. Can any reader supply the answer?—I am, etc.,

June 25th. THE GENERAL PRACTITIONER.

Dr. Cheadle's Trip Across Canada

SIR,—In his very interesting article "Across Canada via the Rocky Mountains in 1863," in the *Journal* of March 2nd (p. 434), Dr. Henry Robinson raises the question whether there is any memorial in Western Canada to Dr. Cheadle. The officials of the Canadian Pacific Railway have no record of any memorial to Dr. Cheadle, nor am I able to find any authority who knows of any monument erected to him in Western Canada. There is, however, a village situated on the main line of the Canadian Pacific Railway, twenty-seven miles east of Calgary, which is named after him, according to the records of the Canadian Pacific Railway, and also according to the records of the Geographic Board of Canada (*Place-Names of Alberta*, Department of the Interior, Ottawa, 1928, p. 32).—I am, etc.,

Calgary, June 7th. HAROLD W. PRICE.

"Annals of Medical History"

SIR,—Many thanks for your kind words about the *Annals of Medical History* in the issue of your *Journal* for May 18th. I want you to know that we appreciate the co-operation that you and so many editors all over the world have given the *Annals*. If only the profession at large were to show some of the enthusiasm that the editors do there would be no question at any time of the continuation of the *Annals of Medical History*.—I am, etc.,

76, Fifth Avenue, New York City, June 13th. PAUL B. HOEBER.

The Services

ARMY MEDICAL SERVICES

Colonel G. A. D. Harvey, C.M.G., Assistant Director of Medical Services, London District, has been selected for promotion to the rank of major-general as from October 6th, and to be a Deputy Director of Medical Services in India in succession to Major-General J. F. Martin, C.B., C.M.G., C.B.E., M.B., who will vacate the appointment on completion of four years as a major-general.

Brevet Colonel W. B. Purdon, D.S.O., O.B.E., *M.C.*, Assistant Director of Hygiene, British Troops in Egypt, has been selected for appointment as Professor of Hygiene, Royal Army Medical College, as from August 18th, in succession to Colonel G. S. Wallace, O.B.E., who is retiring.

Brevet Colonel J. M. Weddell has been selected for appointment as Professor of Military Surgery and Consulting Surgeon to the Army, Royal Army Medical College, as from August 27th, in succession to Major-General J. W. West, C.B., C.M.G., C.B.E., who is retiring.

Colonel H. M. J. Perry, O.B.E., Director and Professor of Pathology, Royal Army Medical College, will be promoted to the rank of major-general (supernumerary) as from September 26th, and will continue in his present appointment.

Obituary

C. H. S. TAYLOR, M.D.

Cambridge

We regret to record the death on June 25th, at his house at Cambridge, of Dr. C. H. S. Taylor, aged 52. Dr. Taylor was born in Basutoland, and was educated at Rugby, Caius College, Cambridge, and St. Bartholomew's. Qualifying M.R.C.S., L.R.C.P. in 1909, he took the Cambridge M.B., B.Ch. in the following year, and having taken the D.P.H. in 1912 proceeded M.D. in 1914. After holding clinical assistantships at Bart's, and at the Hospital for Sick Children, he obtained the posts of senior house-physician and house-surgeon, and house-surgeon to the throat and nose department at St. George's Hospital. During the war he served with the Royal Naval Division, with the rank of surgeon lieutenant, at Antwerp, Gallipoli, and in Italy. On the formation of the R.A.F. Medical Service he was selected as one of the principal medical officers of the new areas, an appointment which carried with it the rank of lieutenant-colonel (wing commander). Following demobilization he settled in Cambridge, and soon became a popular successor to the much-loved Caius physician and rowing coach R. W. Michell, whose practice he took over. "Doctor" to a long succession of rowing crews—an occupation in which his special talents and experience were of great service—he was an extremely popular figure in the University, friend and confidant of don and undergraduate alike. At the time of his death he was endeavouring to complete a book based on the observations he had made during his long medical connexion with athletics. During his lifetime he had contributed articles to this *Journal* on such subjects as the effect on the heart of rowing and other sports; but unfortunately the researches he had planned never reached completion. No member of our profession was more universally loved or more deservedly respected.

Dr. C. B. HEALD writes:

Charles Henry Shinglewood Taylor—affectionately known as "Joss" to a wide circle of friends in this country, and "Tholo" to his relations and friends in South Africa—was the son of Dr. Shinglewood Taylor, who was himself a remarkable man, with a hunger for warlike adventure ranging from the Franco-Prussian War, through the Zulu risings, to the Boer War. It is therefore not surprising that his son stood out in any company as something different—someone with that curious, indefinable personality which makes itself felt and subconsciously influences all those who come in contact with it.

At Cambridge, although only weighing just over 10 st., Taylor was chosen in 1905 as stroke of the University boat, and many will remember his "spurts" in the losing crew of that year as a wonderful feature of the Boat Race. Having recovered from a long period of illness in Switzerland Taylor returned to England, and subsequently held resident appointments at St. George's Hospital. But the after-effects of his illness followed him throughout the rest of his life, and only an inherent, dogged courage enabled him to accomplish much useful work and helped him through the influenza epidemic of 1918. An incident that happened during a short visit to his South African home in his student days is typical of the man. He was visiting a game reserve, and when some women, not knowing better, got into an enclosure with a bull gnu in rut, which

immediately charged them, Taylor sprang without hesitation at the animal, seized its horns, and started to wrestle with it—a feat difficult enough for a tough and hardened cowboy, but well-nigh impossible for so frail a body. He was able to hang on until the women escaped and the gnu was shot.

At the beginning of the war he joined the Royal Naval Division. Even in desperate situations he was able to see the humorous side, and his account—when it could be drawn from him—of the retreat from Antwerp was full not only of humour, but of an understanding of the strategic importance of this diversion, and of the courage and endurance of the raw Naval Division. Again, when he drew a picture of how he had to have a tooth extracted during a bombardment at Gallipoli, with the dental chair situated in a favourite spot for Turkish shells, one could visualize the scene of this tragic venture in a new light, and appreciate vividly that even in such auxiliary services there was no "healthy billet" on the Peninsula. Later in the war his known reliability and application led to his being specially summoned to help in the formation of a separate medical service for the R.A.F. His staff work was so conscientiously carried out that the Medical Advisory Committee chose him as one of the principal medical officers which were appointed to each area.

At the end of the war he took up practice in Cambridge, applying his practical knowledge of rowing and of the examination of pilots to the problems of the physical condition of healthy young adults. He soon became acknowledged as an authority on the degree of "well-ness" of an individual rather than on the "ill-ness" of a patient. Though he was always experimenting with apparatus for measuring different functions of the body, he never lost sight of the fundamental importance of variations in individuals. In consequence, he never tried to squeeze those he examined into stereotyped moulds, and throughout all his researches and all his investigations he retained his love of the individual and its wonderful variations.

J. T. CUNNINGHAM, M.A.

Late Lecturer in Biology, London Hospital Medical College

We regret to note the death on June 5th, at the age of 76, of Mr. Joseph T. Cunningham, marine zoologist and biologist, of the London Hospital Medical College. After holding a science scholarship at Balliol College, Oxford, he was elected a Fellow of University College in 1882, and was appointed to the Marine Research Station at Granton in 1884. He then held various teaching posts elsewhere until his appointment as lecturer in biology at the East London College and at the London Hospital.

Mr. G. P. MUDGE (Reader in Biology, London School of Medicine for Women) writes: In the death of Mr. J. T. Cunningham zoological science loses a conscientious and devoted worker and a fearless and honest critic. If it can be said of any man that he lived and worked alone for the love of the science which he pursued, it most certainly can be said of Cunningham. Considerations of expediency or compromise played no part in his outlook on scientific work or on life in general. His character was essentially and transparently honest, and as a natural outcome of such a possession his exposition of what he conceived to be truth was direct and frank. He retained this candid and fearless attitude to the very last, even to those whom he most affectionately revered. In a more perfect world Cunningham would have received a larger meed of that recognition which he undoubtedly deserved.

Towards the latter part of a long scientific career Cunningham became, in October, 1914, a member of the biological staff of the London Hospital Medical College. He was keenly interested in his work with medical students, and found many opportunities of discussing with them the application of biological knowledge to medical problems. Here he found a happy realm, for he remained to the last one of the most eminent of the neo-Lamarckians; and clearly, if there be any truth in Lamarckism, there is obvious contact between it and those problems which medical men, working in the sphere of statesmanship, are called upon to consider. And Cunningham, devoted disciple of his convictions, was never too tired or too busy to engage in intellectual companionship with his students on problems of evolution. During the time he was a member of the staff of the London Hospital Medical College, and later as lecturer on zoology at East London College (now Queen Mary College), he published *Hormones and Heredity*, in which he sought to make good one of the weak points in the Lamarckian theory—namely, the nature of the mechanism by which changes produced in bodily tissues by environmental influences can be hereditarily transmitted to succeeding generations through the agency of the sex cells. He suggested that "hormones" might be the factors by which characters acquired in somatic tissues could be carried to, and become impressed within, the germ cells, and so be rendered capable of transmission.

In 1925, at the age of 66, he retired from active teaching and spent the rest of his life in research work at the London Hospital Medical College. It is a feature of his remarkable vigour and fearlessness and his love of scientific work that in 1930, at the age of 71, he undertook an expedition with Mr. D. M. Reid of Harrow School to the island of Marajo, at the mouth of the Amazon, for the purpose of collecting further evidence of the operation of neo-Lamarckism in evolution. He was able to show, by examination on the spot, that the male of the American lung-fish—*Lepidosiren*—does secrete oxygen from vascular, filamentous outgrowths of its pelvic fins, and so "aerates" the otherwise stagnant water in which the fertilized eggs develop into larvae.

One further feature of his career deserves mention. During the war, being very much over the military age, he joined one of the home defence corps as a private. He was later offered a commission in the 2nd Battalion East Surrey Volunteers, which he accepted. He experienced a strenuous and interesting time, but it was a life in harmony with the virile qualities of the man. His only son having been killed in the war, England loses for good one more of the "fighting breed." By all who really knew him Cunningham was loved and respected.

The inhabitants of Clough, Co. Down, received the knowledge of the sudden death of their beloved family doctor, Dr. THOMAS CROMIE, on Saturday, June 15th, with a sense of sincere personal loss. Dr. Cromie was 75 years of age, having been born in 1860, and all his professional life was spent in the village as the successor to his father, who in his turn had succeeded his uncle in 1834. He received his medical education at Queen's College, Belfast, and graduated M.D., M.Ch. in 1882, and at once began practice in Clough, where he soon built up for himself an enviable reputation as a skilful physician, but also one of exemplary and untiring attention to his patients and their welfare. Dr. Cromie's interests extended to public affairs and to the Masonic Order, of which he was an enthusiastic member as well as a valuable organizer of its charitable activities in the Province of Down. He was unmarried, and leaves two brothers and two sisters (one of whom is the widow of Sir John Newell Jordan, G.C.M.G.), and with these and others of the family sincere sympathy is felt. An intimate friend writes: Thomas Cromie passed away suddenly on June 15th, while attending a midwifery case. He was the third of his family to hold the Clough Dispensary, having succeeded his father in 1894. Cromie was an ideal practitioner, absolutely unselfish and untiring in his devotion to his patients. The whole countryside loved him and held him in high honour. He not only looked after his

patients' bodily ailments, but also helped them in their spiritual difficulties. He was a zealous and true Mason and had attained high rank in the Order, and always conscientiously practised its teachings."

Dr. FREDERIC POLLINGTON HEARDER, who died on June 23rd, was born in 1872 at Carmarthen, where his father, Dr. C. G. Hearder, practised. From Queen Elizabeth Grammar School, Carmarthen, he went to study medicine in Edinburgh, where he was a medallist of Surgeons' Hall, and graduated M.B., C.M. in 1893, proceeding M.D. in 1897. Immediately after graduation Dr. Hearder returned to his native county as assistant medical officer to the Carmarthen Asylum, whence he passed in the following year to the West Riding Asylum at Wakefield. In 1903 he moved to the North Riding Asylum at Clifton, and three years later was appointed medical superintendent of the Yorkshire Inebriate Reformatory. He was also associated for some years with the Mid-Yorkshire Mental Institution. During the war he served as temporary captain in the R.A.M.C., and was posted to duty at neurological hospitals. After the war he was appointed deputy commissioner of medical services (neurological) to the Ministry of Pensions, Welsh Region, with headquarters at Cardiff. Dr. Hearder contributed a number of papers on the psychoneuroses and kindred topics to the *Lancet*, the *British Medical Journal*, and the *Edinburgh Medical Journal*. He also published a book of lectures to attendants and nurses in mental hospitals, and his analysis of 131 male criminal lunatics admitted to the West Riding Asylum, 1894–6, appeared in the *Journal of Mental Science*.

The death took place recently of Dr. JOHN MARSHALL DAY, at Rathfarnham, County Dublin. Dr. Day was for over fifty years medical superintendent of the Cork Street Fever Hospital, Dublin, where he succeeded the late Dr. Chandlee. Owing to ill-health he retired in 1933, having then been a member of the British Medical Association for forty-two years. He graduated M.B., B.Ch. in 1885 at Dublin University, and obtained the diploma in State Medicine in 1888. He was, before his illness, an active member of both the British Medical Association and the Irish Medical Association; he was also a Fellow of the Royal Academy of Medicine in Ireland. He contributed papers on enteric rash and on the diagnosis of scarlatina to the *Dublin Journal of Medical Science*, and on malignant scarlatina to the *British Medical Journal*, 1900. Dr. Day was a keen sportsman, and a follower of the fastest packs of hounds within reach of Dublin. He was a very well known and popular member of his profession.

EDMOND JAMES BOARDMAN, M.D., F.R.C.S.(C.), of Winnipeg, Canada, president of the Manitoba Medical Association, 1928–9, died suddenly of coronary thrombosis on May 12th. Dr. Boardman acted as chairman of the Auditorium Committee in connexion with the ninety-eighth Annual Meeting of the British Medical Association, held at Winnipeg in 1930, and rendered most valuable service. He was District Deputy Grand Master in the Grand Register of Manitoba A.F. and A.M., urologist to St. Boniface Hospital, and assistant professor of clinical surgery (urology) in the Faculty of Medicine, University of Manitoba.

T. GLENDENNING HAMILTON, M.D., of Winnipeg, died on April 7th, aged 61. He was lecturer in clinical surgery in the Faculty of Medicine, University of Manitoba, member of the surgical staff of the Winnipeg General Hospital, president of the Manitoba Medical Association, 1921–2, member of the Executive Committee of the Canadian Medical Association, 1922 to 1931, member of the Legislative Assembly of Manitoba, 1915 to 1920, and chairman of the Winnipeg Public School Board. For a number of years before his death Dr. Hamilton was keenly interested in psychic research, and at the meeting of the British Medical Association at Winnipeg in 1930 he addressed a gathering of delegates on the subject of psychic phenomena.

Universities and Colleges

UNIVERSITY OF OXFORD

In congregation on June 27th Professor J. A. Gunn was appointed director, and Dr. K. J. Franklin assistant director, of the Institute for Medical Research.

Sir Farquhar Buzzard, Regius Professor of Medicine, moved a decree to enable the University to accept a bequest under the will of the late Mr. T. G. Barnett of scientific instruments and a collection of clocks and watches, together with a sum of £200 to be applied for its care.

The following medical degrees were conferred:

B.M.—R. Passmore, G. Ashton.

The following candidates have passed in the examinations indicated:

FORENSIC MEDICINE AND PUBLIC HEALTH.—P. C. Alexander, W. J. C. Anstie, D. R. Balcombe-Brown, P. S. Buckley, M. C. Chapman, H. N. Davis, H. Fidler, W. E. Henley, G. A. Hodgson, J. R. Hollick, J. F. Loutit, W. P. Mallinson, A. P. Meiklejohn, R. Passmore, P. R. P. Pepper, H. Rees, F. G. Ward.

MEDICINE, SURGERY, AND MIDWIFERY.—W. J. C. Anstie, N. E. R. Archer, R. Bevan, P. G. Burgess, H. Burton, M. C. Chapman, C. D. Coode, P. E. Cresswell, K. B. Dawson, C. F. Hamilton-Turner, W. E. Henley, D. H. Hertz, J. R. Hollick, C. Hollins, N. Leitch, A. P. Meiklejohn, D. F. G. Moir, J. C. Penton, T. W. H. Porter, K. C. Royes, W. R. Trotter, J. W. A. Turner.

MATERIA MEDICA AND PHARMACOLOGY.—E. J. S. Barthorpe, R. Billig, R. G. Blackledge, L. B. Bok, J. F. Bourdillon, T. N. Branch, R. C. Browne, F. G. Ethiraj, A. W. Frankland, T. Gadian, W. M. Gibson, S. R. Gloyne, N. J. S. Gurney, J. C. Hewetson, J. R. Hollick, R. M. Hugo, A. M. L. Isabella, E. L. James, P. R. W. Leigh, J. N. Mills, R. G. W. Ollerenshaw, H. G. O. Owen-Smith, J. A. Partridge, C. W. R. Rayne-Davis, I. F. Rose, T. B. Snell, N. E. Stidolph, S. F. Taylor, G. J. Walley, J. Walter, C. M. F. Walters, D. Whitteridge, W. Wynne Willson, W. B. Young.

PATHOLOGY.—W. D. Brinton, R. C. Browne, W. W. Coppinger, P. S. Edgecombe, A. F. Foster-Carter, D. B. Fraser, W. E. Gibb, S. R. Gloyne, C. F. Hamilton-Turner, G. F. C. Hawkins, J. C. Hewetson, J. H. Lewis, N. H. Martin, H. Muller, C. I. Murphie, T. E. Ooi, H. M. Sinclair, D. H. Swayne, R. Y. Taylor, A. L. Watson, A. L. Young.

UNIVERSITY OF LONDON

The Senate on June 12th resolved to institute a University Chair of Dental Prosthetics and a Readership in Anatomy, tenable at Guy's Hospital Medical School, and a Readership in Entomology, tenable at the London School of Hygiene and Tropical Medicine.

Graham Legacy

The Senate received the annual report of the Graham Legacy Committee for the year ending August, 1935, from which the following are extracts:

1. The general purpose for which the Graham Fund was founded is to aid research in the school of advanced medical studies connected with University College Hospital, and the Fund has for its object the prevention, cure, and alleviation of human disease and suffering.

2. The Graham Scholarship continues to be held by Dr. E. S. Duthie.

3. The activities of the laboratories continue along the usual lines. Apart from the gentlemen who receive definite grants for the expenses of their investigations, most of those engaged in research in University College Hospital Medical School are substantially assisted by the facilities and equipment provided by the Fund. Grants amounting to £120 were made by the committee to six workers, who have been engaged in the following inquiries: C. Bolton, absorption from the intestine; A. E. Boycott, regeneration of blood; G. R. Cameron, transplantation of liver; J. W. McNee, pathology of spleen; F. H. Teale, immunity; E. S. Duthie, antimucin serum.

Professor A. E. Boycott, F.R.S., was reappointed director of research under the Charles Graham Medical Research Scheme for a period of one year from September 1st. Dr. A. M. H. Gray has been elected chairman of the Graham Legacy Committee.

The following appointments have been made: Lord Dawson of Penn as governor of the London School of Economics; Mr. H. L. Eason and Professor G. E. Gask as governors of the British Post-Graduate Medical School; Professor J. H. Burn will represent the University at the Twelfth International Congress of Pharmacy at Brussels, July 30th to August 6th; and Sir Humphry Rolleston at the tenth International Congress of the History of Medicine at Madrid in September, in the place of Professor Charles Singer, who is unable to act.

UNIVERSITY OF MANCHESTER

The following candidates have been approved at the examination indicated:

DIPLOMA IN PUBLIC HEALTH.—N. S. Malimson, J. C. Preston.

UNIVERSITY OF LEEDS.

At a congregation held on July 1st the honorary degree of LL.D. was conferred on the Right Hon. Walter Elliot, D.Sc., M.B., F.R.S., and the honorary degree of D.Sc. on Professor Harvey Cushing, M.D.

UNIVERSITY OF GLASGOW

The Secretary of State for Scotland announces that the office of Regius Professor of Anatomy in the University of Glasgow will become vacant on October 1st, owing to the resignation of Professor T. H. Bryce. Applications for the chair, accompanied by two copies of recent testimonials, should be addressed to the Private Secretary, Scottish Office, Whitehall, London, S.W.1.

At a ceremony of graduation on June 28th the following higher degrees were conferred:

M.D.—(1) with high commendation: J. Wyllie (*in absentia*); (2) with commendation: J. L. Dunlop; (3) ordinary degree: A. F. R. Dewar (*in absentia*).
D.Sc.—T. J. Jones.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

The specimens presented to the College during the past year will be on display in Room I of the Museum from Thursday, July 11th, until Thursday, July 25th.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

The House of Commons, on June 26th, agreed to amendments made by the House of Lords in the Superannuation Bill.

The West Riding of Yorkshire Mental Hospitals Board (Superannuation) Bill was reported to the House of Commons with amendments from Select Committee on June 27th.

The House of Commons, on June 28th, read the Cuddington Joint Hospital Bill a third time.

On July 1st the House of Lords read a third time and passed the St. Bartholomew's Hospital Bill, to enable the governors "to make and accept charges for the accommodation and treatment of certain patients and to provide accommodation in connexion therewith; and for other purposes." On the same date the Bill was read a first time by the House of Commons.

The Voluntary Hospitals (Paying Patients) Bill, which had come down from the Lords, was read a first time by the House of Commons on July 1st.

On July 2nd the adjourned debate on the motion for the second reading of the Criminal Lunatics (Scotland) Bill was concluded in the House of Commons, and the Bill was read the second time. The Public Health (Water and Sewerage) (Scotland) Bill was read a second time by the Commons on the same date.

The Durham University Bill was read a third time and passed by the House of Lords on July 2nd.

Estimates for Scottish Health Department

The Estimates for the Department of Health for Scotland were discussed in the House of Commons on June 28th. The Under-Secretary for Scotland, Mr. SKELTON, said that wherever the health of the Scottish nation was tested there was an improvement. The death rate was the lowest since death rates were recorded, being 12.9 per 1,000. The infant mortality rate was also the lowest ever recorded, being 78 per 1,000, and had decreased by 30 per cent. since the beginning of the century. The health of school children showed a similar improvement. The only direction in which the situation had not improved was in maternal mortality, in which there had been a slight rise, although the mortality was about the same as the average of the last five years. The deaths as the result of childbirth in 1934 were 6.2 per 1,000 in place of 5.9 in the preceding year. The report on maternal mortality, which had long been subject to anxious examination by experts, was to be published in a few days. The report is based upon an examination as intensive as, if not more intensive and exhaustive than, any previous examination into this question in either England or Scotland. It proceeded upon records of approximately the whole of the maternal mortality cases over a period of many months ending in 1932. The records of these cases, numbering 2,400, have been examined by experts with meticulous care, and the conclusions drawn and recommendations made would be of immense importance. He must mention two conclusions. First, the general level of ante-natal care was unsatisfactory and the number of ante-natal beds in Scotland was inadequate. Secondly, a most disquieting feature of present-day obstetrical practice was hurried, unnecessary, meddlesome midwifery. Evidence in this connexion showed beyond doubt that the resort to artificial intervention with the normal processes of delivery was excessive.

Under the existing Housing Acts, 20,915 houses were completed in Scotland in 1933, 15,000 of these being local authority houses. Last year the total was 18,417, 14,700 being local authority houses. This drop had been expected, and later figures showed the numbers were again increasing. He hoped that the local authorities' completions would be in the neighbourhood of 17,000 for next year. The position of houses under construction was satisfactory, and striking progress had been made with slum clearance. At the middle of June, seventeen and a half months after the beginning of the five-year plan for slum clearance, tenders had been approved for 30,681 houses out of 47,900 in the programme. Of the tenders approved only 6,000 represented houses which had not been begun or completed, and the momentum of slum clearance was still increasing. Under the Rural Workers Acts the reconditioning of farm cottages went steadily on, and the Department proposed to advise the authorities who were administering the Acts to see that the improvement of the cottages included, if necessary, an increase in the rooms available.

Criticism of Hospital Provision

Sir ARCHIBALD SINCLAIR said the House was glad to know that the health of Scotland was good and was improving, but unfortunately the public demand for hospital treatment was not being met although, as pointed out in the annual report of the Department of Health, that demand increased. The references in this report to the delay in the admission of patients in the medical wards of hospitals and to their discharge when classified as "relieved" rather than as "cured" was very serious. Sir Archibald asked what the Government was doing to remedy that state of affairs. He had talked recently with a doctor who, after a number of years spent in the Malay States, had returned to take up an appointment in Scotland. This doctor said that hospital services in Scotland were inferior to those in the Malay States. While asking the Government what steps it was taking to build up an efficient hospital service in Scotland, Sir Archibald said he wished to acknowledge the help which the Government had given to those dealing with hospital problems in Sutherland and Caithness. The appointment of a resident surgeon to the hospitals in Caithness had been of immense practical value. It would also be a great boon to have a consulting physician. That question had been considered by the local authorities in consultation with the Department of Health. He understood proposals had been made for extending the infirmary in Inverness, and he suggested that a consulting physician there could render valuable help to his medical colleagues in that area.

Highlands and Islands Medical Service

Sir IAN MACPHERSON referred to water shortage in the Highlands, and said that the latest grant of £137,000, of which only a quarter of the expenditure was given by the State, was inadequate in such a small rateable area. Turning

to the Highlands and Islands Medical Service, he said no more useful service had ever been introduced in any country. They were establishing a very fine hospital service in the Highlands, and he disagreed with Sir A. Sinclair that hospitals in Malaya were better than those in the North of Scotland. Sir ARCHIBALD SINCLAIR intervened to say that he only quoted an opinion that the hospital services available to the people were not so good in the Highlands as in Malaya. Sir IAN MACPHERSON stated that the equipment in the Highland hospitals was better, the service was better, and the type of doctor found in the hospitals in Inverness was in many respects beyond compare. There was a tendency to use these hospitals mainly for surgical cases. The time had come when the State might well consider the extension of these hospitals for an increase of medical services. The State was always backed up in the Highlands by voluntary grants from the people themselves. He had always advocated that doctors and nurses in the Highlands should be well supplied with houses and telephones. There had been an advance in that direction, and he hoped the Government would go on with the good work.

Sir CHARLES MACANDREW said the birth rate in Scotland was half what it was sixty years ago, but if compared with the English birth rate in the last twenty years it was found that the English rate had decreased by 38 per cent., whereas the Scottish rate had only decreased by 31 per cent. The problem of maternal mortality must be attacked. It was reported that of 11,000 midwives enrolled in Scotland by the Central Midwives Board from the establishment of the roll in 1915 up to March, 1934, only 7,440 were enrolled after passing the Board's examination. It seemed extraordinary that 3,500 others should be on the roll, and the matter required attention. The report of the Department of Health dealt with the health of children whose mothers were infected by venereal disease. Was it possible to make it compulsory for doctors to notify these cases so that the children might be properly cared for? Sir Charles referred to the care of the teeth of school children. The dental staffs in Scotland consisted of forty-eight whole-time and thirty-five part-time dentists, and if a little of the money which might be saved on other things was devoted to this service it would be of great benefit. He also drew attention to the insanitary conditions of holiday camps, and suggested that medical officers of Territorial units should be allowed by agreement to inspect these camps, because they had much more experience of them than the officials of the Department of Health.

Mr. MAXTON said that the number of persons who had to apply for poor relief was precisely the same proportion in 1934 as it was in 1867, which showed there had been no substantial change in the ratio of the very poor people to the whole population. He found that in some districts as little as 5s. a week was provided in 1934 for maintaining the sick poor, the able-bodied poor, and the insane poor in Poor Law institutions. That was an appalling figure. Dr. G. A. MORRISON drew attention to evidence in Aberdeen of the number of girls of 17 or 18 years who had very bad teeth, or almost no teeth. These girls, he presumed, received skilled dental attention during their school life, but there was a gap between that attention and the time when they were due to receive dental benefit from some approved society. That gap could be filled to some extent if there was an extension of dental benefits to the Junior Instruction Centres.

Government Reply

Mr. SKELTON, replying to the debate, said that in the provision of hospitals the Government could not interfere with local authorities. The Act of 1929 made it easier for local authorities to combine for the purpose of building and maintaining hospitals. He would continue pressure on the local authorities to get on with the work of increasing hospital accommodation wherever it was insufficient. Much required to be done before the matter could be regarded as satisfactory, but under existing legislation he could only exert pressure on the local authorities. He explained the number of midwives who had not passed an examination by saying that these were midwives before the last Act came into operation, and it was not possible to apply the provisions of the Act to them. Care of the teeth was also primarily a matter for the local authorities. He would like to see more dental provision for school children, but he had no ready-made proposal for dealing with the interval between school years and entry into insurance. He did not think any existing legislation would enable him to deal with the point. Local authorities had considerable powers at present in making by-laws for the control of camps, but it might well be that there would in future be legislation giving them greater control. Concerning water supplies, Parliament had decreed that the Government grant should be limited to 25 per cent. That money was all ear-marked, and was now being spent.

The Estimate was withdrawn to permit possible future discussion.

Diseases of Animals Bill

The Diseases of Animals Bill, which had passed the House of Lords, was read a second time by the House of Commons on June 26th. Dr. ELLIOT said the first purpose of the Bill was to bring poultry within the provisions of the Diseases of Animals Bill, and the second to provide for the regulation of manufacture and importation of certain therapeutic substances used for veterinary purposes. The provisions under which these were now made and sold were unsatisfactory. The Cattle Diseases Committee of the Economic Advisory Council had recommended a standard for one of these substances.

Electrical Treatment in Hertfordshire: Proposed Police Surveillance

Objection having been taken to the Hertfordshire County Council Bill in the House of Commons, it was discussed on June 26th on a motion for its second reading. This Bill had already passed the House of Lords. Mr. Croom-Johnson now moved its rejection. Admiral Sir MURRAY SUETER, supporting the Bill, said its provisions included proposals to save the public from being imposed upon by spurious practitioners who were active in offering electrical treatment. Another clause gave power to local authorities to make by-laws ensuring that hairdressers' and barbers' premises were clean and satisfactory. Powers were also asked for the control of swimming baths, many of which had been opened in Hertfordshire, and there was a clause to prevent diseased meat being sold for human consumption.

Dr. O'DONOVAN said that if Clause 48 and consequent clauses became law in the form in which previous private Bills had been passed, Parliament would have agreed to classifying as undesirable ancillaries of the practice of medicine the men and women who practised massage, electric treatment, manicuring, chiropody, radiant heat treatment, light treatment, and vapour or other bath treatment. These would be compelled to notify the chief of police of their intention to practise these special branches. As Part IV of the Bill stood its implications were offensive to a body of useful people. Since 1921 he had been a teacher, examiner, and practitioner of this special part of medical treatment, and had not found those he taught or examined to deserve the special attention of the police. Part IV did not require every registered practitioner to notify the police of his intention to practise special branches of medicine, but medical practitioners, perhaps London experts, who wished to practise in the town and county of Hertford any of these special branches were required annually to produce from Hertfordshire practitioners a certificate that they were fit to carry out the special technique. Even the county town of Hertford had not a panel of experts competent to certify. Any practitioner in Hertford could deliver women in difficult labour without being required to prove special competence, but should he install a mercury lamp or an *x*-ray apparatus he must year by year prove his fitness. Moreover, the county council asked for powers to pass by-laws instructing the doctor and the certified massage nurse how they should keep their records. The county council wished to set up a form of medical register of its own, and asked powers to set out what should be the technical qualifications of those who practised special forms of treatment. This Bill and similar Bills would establish up and down England a multitude of minor, quasi-responsible General Medical Councils. There was much professional feeling on this matter. The Bill did not exclude the use of

x rays or of radium treatment by anyone, for the courts would not hold that these were electrical treatment.

After further discussion Mr. Croom-Johnson withdrew his motion for rejection, and the Bill was read a second time.

The Bill is technically an unopposed one; the Chairman of Committees has power to allow evidence on the matters raised by Dr. O'Donovan.

Alleged Mortgage and Transfer of Insurance Practices

Mr. LOGAN asked, on June 27th, if Sir Kingsley Wood was aware of the mortgaging and transfer of medical practices in connexion with panel patients, and whether he was prepared to investigate this matter. Mr. Logan averred that these operations were controlled by financial houses. Sir KINGSLEY WOOD replied that his attention had been drawn to arrangements by which medical practitioners were able to obtain loans on the security of their income from insurance practice. In the absence of specific evidence that these arrangements exercised a prejudicial effect on the insurance service, he did not think this was a matter in which it would be proper for him to intervene. If Mr. Logan had any particular facts of his own knowledge, Sir Kingsley was ready to discuss them with him. Mr. RHYS DAVIES asked Sir Kingsley to look at the report on this subject which was sent to Sir Hilton Young by the Association of Insurance Committees. Sir FRANCIS FREMANTLE intervened to point out that patients always had a choice of doctor and could not be "sold" except from the point of view of goodwill and subject to their wish. Mr. MACQUISTEN asked whether, if patients were "sold on the hoof" by medical men, this should not be regarded as infamous conduct and a breach of professional etiquette.

No further answer was returned.

Housing (Scotland) Bill

On July 2nd the Housing (Scotland) Bill was considered in the House of Commons on report. Sir ROBERT HORNE moved a new clause increasing the permitted number of occupants to 2½ persons in a room having a floor area of more than 130 square feet. Mr. SKELTON said that the Government was determined not to alter or diminish the standard of housing laid down in the Bill. The vital matter in Scotland was the two-roomed house, and in such houses they had to be careful that the standards were not such as would allow too many persons to live in two rooms, even if these were 13 ft. by 10 ft.

The clause was negatived. The Bill passed the report stage and was read a third time.

Committee on Scottish Health Services

On July 2nd Mr. SKELTON told Mr. Guy that the Scottish Departmental Committee on Scottish Health Services had completed the taking of evidence over the wide field covered by the terms of reference. The preparation of a report would require time.

Duty on Imported Spectacle Frames.—On the motion of Dr. Burgin the House of Commons, on June 26th, agreed to an Additional Import Duties Order imposing a uniform duty of 33⅓ per cent. on imported spectacle frames. Dr. BURGIN remarked that spectacles supplied under the National Health Insurance scheme accounted for 10 to 20 per cent. of the whole sold. The House approved other duties, including one of a halfpenny on each imported toothbrush and one of 8d. each on imported clippers for human hair, if the clipper cost less than 3s. 4d.

Pulmonary Disease Among Barytes Miners in Shropshire.—Mr. DUCKWORTH asked the Secretary for Mines whether his attention had been drawn to the frequent occurrence of lung trouble among barytes miners and quarrymen in the Minsterley and Pontesbury district of Shropshire, and in particular to a death from silicosis on May 21st; whether the inspectors of mines had inspected and reported upon the conditions under which work was carried on; and whether he was satisfied that every possible precaution was taken to safeguard the workers from this danger. Captain CROOKSHANK said he had received no information of cases of industrial pulmonary disease in that district except at one barytes mine. At this mine proper precautions were being taken following a thorough inspection of the conditions by the inspectors of mines. The case referred to had not previously been brought to his notice, and he was having it investigated.

Care of the Deaf.—Sir KINGSLEY WOOD announced on June 27th that he was not at present satisfied that special legislation on the disability of deafness was needed. The report prepared by the late Dr. Eichholz on the condition of the deaf did not recommend any further legislation, but advocated certain measures, which were commended to local authorities in a circular issued by the Ministry of Health in May, 1933. That Ministry continued to impress on local authorities the importance of giving financial assistance, where necessary, to those voluntary agencies which found suitable employment for deaf and dumb persons.

Training of Nurses in Scotland.—On July 2nd Mr. SKELTON informed Mr. Guy that the Scottish Departmental Committee on the training of nurses had completed taking evidence and was considering its report.

Accidents from Domestic Electrical Appliances.—Sir JOHN SIMON, replying to Mr. Temple Morris on July 1st, said that accidents from the use of electrical apparatus in domestic premises were not reportable to the Home Office. Fifteen fatal accidents of this kind came to the notice of the Department during 1934. The law did not prohibit the sale of electrical appliances on the ground that they might be dangerous to inexperienced persons. Few instances had come to the notice of the Department in which exception could reasonably be taken, on grounds of danger, to electrical apparatus placed on sale. In such cases manufacturers generally had shown themselves ready to remedy the defects when pointed out to them.

Notes in Brief

Sir John Simon cannot hold out any hope of introducing legislation at present amending the Shops Acts.

Medical News

The centenary of the Middlesex Hospital Medical School will be celebrated on Wednesday, July 24th. At 3 p.m. the Earl of Athlone, Chancellor of the University of London, will distribute prizes gained by students, and at 9 p.m. H.R.H. Prince Arthur of Connaught and Mr. S. A. Courtauld will receive the guests at a scientific evening.

The seventeenth annual meeting of the Mental Hospitals Association will be held in the Council Chamber of the Guildhall, London, on Wednesday, July 10th, at 11 a.m. Admission will be by ticket, obtainable from the secretary, 5, Church Passage, Guildhall, E.C.2; it is restricted to the representatives of mental hospitals.

The chairman and committee of St. Vincent's Orthopaedic Hospital have issued invitations to meet the Archbishop of Westminster at a banquet at Claridges Hotel, Upper Brook Street, W., on Monday, July 15th, at 8 p.m., on the occasion of the silver jubilee of St. Vincent's Orthopaedic Association.

The twenty-eighth Voyage d'Etudes Médicales to the spas of France will take place this year in Eastern France, from September 3rd to 14th inclusive, under the leadership of Professor Maurice Villaret (Paris), Professor Fontes (Strasbourg), and Professor Santenoise (Nancy). The party will assemble at Nancy and the following places will be visited: Strasbourg, Niederbronn, Sainte-Odile, Colmar, Gérardmer, Bussang, Divonne, Salins du Jura, Besançon, Plombières, Bains-les-Bains, Bourbonne, Contrexéville, Vittel. *En route* excursions will be made to the many interesting touring centres, including the Ballon d'Alsace. The end of the tour will coincide with the opening of the Congress on Gout and Uric Acid, to be held at Vittel. Further information may be obtained from Madame Juppé-Blaise, Federation of the Health Resorts of France, Tavistock House (North) Tavistock Square, W.C.1.

For the purpose of necessary redecoration and repair the Library of the British Medical Association will be closed for three weeks from Saturday, August 10th.

The Fellowship of Medicine (1, Wimpole Street, W.) announces the following courses: urology, with clinical and cystoscopic demonstrations, at All Saints' Hospital, from July 8th to 27th; general medicine and surgery, at Southend General Hospital, on July 13th and 14th; and dermatology, at Blackfriars Skin Hospital, every afternoon from July 15th to 27th. A panel of teachers, to give clinical instruction at their in-patient and out-patient clinics, is available daily. Courses of instruction, clinics, etc., arranged by the Fellowship are open only to members and associates.

A vacation course in the administration of Binet-Simon tests of intelligence will be held at the Institute of Education, London, from August 14th to 24th. It has been organized by the National Institute of Industrial Psychology, and is intended for doctors and nurses and others concerned with mental hygiene. Particulars can be obtained from the National Institute of Industrial Psychology, Aldwych House, Aldwych, W.C.2.

An international medical congress will be held at Montreux from September 9th to 14th, when addresses will be delivered, among others, by Abderhalden of Halle, Askanazy of Geneva, Sir Henry Dale of London, E. Feer of Zurich, E. Laqueur of Amsterdam, Egaz Moniz of Madrid, Friedrich von Müller of Munich, C. Nicolle of Tunis, P. Nobécourt of Paris, L. Rajchmann, director of the Health Section of the League of Nations, and G. Sanarelii of Rome. Further information can be obtained from the secretary, Klosterberg 27, Berlin.

The All-Russia Congress for Physical Therapy will be held at Odessa from August 22nd to 25th, when the subjects for discussion will be physical therapy in relation to overwork, acute infectious diseases, results of trauma, and the vegetative nervous system.

July 6th is the fiftieth anniversary of the success of the first inoculation by Pasteur with the vaccine for rabies.

The trustees of the Dr. Jessie Macgregor Prize in Medical Science have awarded the prize, value £50, for the present triennial period to Mary Broadfoot Walker, M.B., Ch.B.Ed., for her work on physostigmine in the treatment of myasthenia gravis.

The Metropolitan Water Board on June 28th appointed Donald Craig Norris, M.D., F.R.C.S., as its chief medical officer, in succession to the late Sir John Collie. Dr. Norris will take up his duties under the Board on September 1st next.

Therapeutic Substances Amendment Regulations, 1935, have been made by the Joint Committee constituted under the Therapeutic Substances Act, 1925, and are published by H.M. Stationery Office (Statutory Rules and Orders, 1935, No. 580, price 3d.). They come into force on August 1st, and together with the principal Regulations (S.R. and O., 1931, No. 633) may be cited as the Therapeutic Substances Regulations, 1931 and 1935. The amendments and additions to the existing schedules apply to staphylococcus toxoid, antipneumococcus serum (Type I and Type II), staphylococcus antitoxin, gas-gangrene antitoxin (oedematiens), gas-gangrene antitoxin (*Vibrion septique*), and diphtheria prophylactic.

The Belgian Society for Gynaecology and Obstetrics offers a prize of 10,000 Belgian francs for the best work on gynaecology. The prize will be awarded every four years, and for the first time in 1938.

The medical faculty of Frankfort University has chosen the arsenic content of the blood in cancer of the uterus as the subject for the Hermann Freund prize of 300 marks.

Professor M. Ciuca of the Bucarest Faculty of Medicine has gone to Russia in charge of a scientific mission, under the aegis of the Health Section of the League of Nations, to inquire into the treatment of malaria by synthetic drugs.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone, unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The **TELEPHONE NUMBER** of the British Medical Association and the *British Medical Journal* is EUSTON 2111 (internal exchange, five lines).

The **TELEGRAPHIC ADDRESSES** are
EDITOR OF THE *BRITISH MEDICAL JOURNAL*, *Aitiology Westcent, London.*
FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London.*
MEDICAL SECRETARY, *Medisecra Westcent, London.*

The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS

Ketogenic Diet and Lactation

"M. D." (London, N.13) writes: A patient who had *B. coli* pyelitis early in pregnancy and responded quickly to ketogenic diet has now a recurrence and is lactating. I would like to know if any of your readers have experience of the use of ketogenic diet during lactation. Has the diet any effect on the amount of milk secreted, and, since diacetic acid behaves pharmacologically as an anaesthetic, will ketosis in the mother have any adverse effect on the infant?

Prolonged Use of Phenolphthalein

"J. D." writes: Can anyone inform me whether it is safe to continue to administer one grain of phenolphthalein in tablet form nightly for correction of constipation associated with a mild degree of haemorrhoids? The drug has now been administered for several years without apparent ill effect. Any other equivalent substitute would be tried.

Income Tax

Increase in Share of Firm's Profits

"C. H." was entitled to one-third of the firm's profits up to January 1st, 1935, and to one-half thereafter. On what basis should the tax payable by him for the year to April 5th, 1935, be calculated?

*** Three-quarters of one-third plus one-quarter of one-half of the firm's gross assessment. It is not material that the firm's accounts are made up to December 31st. The assessment based on the earnings of the partnership for the year to December 31st, 1933, provides the figure for the assessment for the year to April 5th, 1935, but the tax on that assessment is in respect of the profits of the firm for *that* year, and should be divided between the partners accordingly.

Temporary Residence

"H. W." is on extended leave from Colonial service. He arrived in this country on December 15th, 1934, and can remain until the latter half of October, 1935. Will he be liable to tax?

*** The question is governed by No. 2 of the Miscellaneous Rules, Schedule D, which provides that "a person shall not be charged to tax as a person residing in the United Kingdom . . . who is in the United Kingdom for some temporary purpose only . . . and has not actually resided in the United Kingdom at one time or several times for a period equal in the whole to six months in any year of assessment." It follows from this that "H. W." is

not liable for 1934–5, but will be liable for 1935–6 if he spends 183 days in the country after April 5th, 1935; he can apparently avoid liability by spending a fortnight or three weeks abroad, according to the date of his departure in October.

Replacement of Motor Car

"W. E. G." bought a 12.6 h.p. "A" car in 1931 for £230, and sold it in 1934 for £125, when he bought a 10 h.p. "T" car for £285. The inspector of taxes claims that the maximum replacement cost is £200 less £125—£200 being the assumed price to-day of an "A" 12 h.p. car.

*** In our opinion the replacement cost is £230 – £125 = £105. There appears to be no direct judicial authority on the point, but it seems too unreal a comparison to make, and, so far as our experience goes, the point is not raised in similar cases. After all, if exact replacement is in question, it would presumably cost a good deal more than £230 to obtain a 12 h.p. "A" car precisely similar to the old one.

Cost of Assistant's Board

The proper amount to charge in the accounts for the board and lodging of an assistant must vary with the total cost of the establishment of which he forms a part, but normally £2 2s. per week is regarded as quite reasonable.

LETTERS, NOTES, ETC.

Care of Vaccination Wound

Dr. T. L. CRAWHALL (Watlington) writes: For the last ten years I have adopted the following method of dressing and caring for the result of vaccination. Many people are surprised—nay, even shocked—at its success! After the usual scarification, for which I use a very sharp scalpel—a Bard-Parker No. 15 blade, to wit—I affix over the area a small square of thin cotton material, such as cambric, with two pieces of strapping. The mother is instructed to leave this *in situ* for twenty-four hours. At the end of that time she may remove it and do nothing more about the vaccination area until redness is noticed. *She is told to bath the baby and its vaccinated arm in the usual way.* As soon as she notices redness, swelling, or vesiculation on the arm she is to powder the arm, *after the baby's usual bath*, with boric powder, and tie over it a small clean pocket-handkerchief. The handkerchief is folded corner-wise, the base of the triangle so formed being folded over once. This double thickness is then applied over the vaccinated area, its ends being tied round the arm with the knot on the outside below the vaccination area. The free tip of the handkerchief is carried over the child's shoulder and pinned to the vest. The mother is instructed to powder the arm after the bath and apply a clean handkerchief every day. The advantages of the method are that the baby never fails to be completely washed; the wound is dressed daily with a cotton surface dressing and is kept clean and dry; the mother finds the method very simple; the baby has more comfort and less pus about him; and the doctor has easy access for inspecting the patient. I have never known washing the "wound" interfere in any way with the efficacy of the vaccination.

Defective Sight in American Children

According to a report issued from New York by the National Society for the Prevention of Blindness, approximately 3,000,000 school children in the United States of America—one-eighth of the entire school population—are handicapped in their education by defective eyesight. The report was drawn up by a joint committee of the National Education Association and the American Medical Association, co-operating with the National Society for the Prevention of Blindness. Hypermetropia is the most common visual defect among American school children. Astigmatism is next in frequency, and myopia is third. Although the report recommends that the school should assume the primary responsibility for giving adequate attention to the eye health of children, it urges parents to learn what the school is doing in sight conservation and how they may co-operate in the home. The report says, further, that "it is not necessary that the school should furnish all the service required in the discovery and correction of the visual defects of children. These services may be secured from professional health organizations, family physicians, community health centres, or elsewhere."

Weighing and Measuring of School Children

When the London council schools reopen after the next summer holidays a scheme for the weighing and measuring of all children under 12, of whom there are 400,000 in the schools, will be started. The object is to ascertain the rate of growth of individual children and to follow up all cases of malnutrition. The age of 12 has been fixed as the maximum because it is felt that little will be gained by bringing into the scheme and measuring for the first time those who are near the leaving age. To secure the weighing and measuring every six months of these children the service of twenty-two full-time school nurses will be required, at an expenditure of £3,960 a year. About 750,000 special charts for record purposes will be printed, and the 1,000 weighing machines at present in the elementary schools will be inspected and repaired every twelve months.

Unusual Injuries

Dr. W. M. HEWETSON (London, W.6) writes: The late Dr. Gatchell, F.R.C.S., informed me of a case which seems worth recording. It occurred in Southern Rhodesia. A man came to him one morning with some slight injury in the outer part of the conjunctival sac. There was no disability of eyesight. He reported that he had been drunk the previous night and did not remember what had happened, but in the morning he had found his pipe mouthpiece broken. Dr. Gatchell examined the injury carefully; an anaesthetic was given and a track followed, when in the posterior part of the orbit he came upon the end of the vulcanite mouthpiece, fully an inch in length.

The Child of To-morrow

"M. D." (London, N.7) writes: A recent case has drawn my attention to the possibility that the synthetic child of Aldous Huxley's *Brave New World* may be a product of the not too distant future. With glucose D in the porridge, vitamin D on the brown bread-and-butter, cod-liver oil in the middle of the morning, paraffin and magnesia night and morning, and a little orange juice just to help the bowels, and (of course) ultra-violet rays twice a week as a tonic, surely the child of the future will rarely require a doctor and certainly never a dentist! Why the "synthetic physician" of to-day should so often be of the female sex I would not dare to explain, but in my experience it is so. What are we going to do about it? Is the race of the future to be the product of synthetic foods and pseudo-Freudian complexes, or is the mere male amongst us going to assert his right to feed and educate his children along the lines of common sense?

Familial Aldehyde Poisoning

J. M. SIJTSEMA, writing in *Nederlandsch Tijdschrift voor Geneeskunde* (April 6th, 1935), states that in a freshly painted room in a farm in Holland four of the five members of the family presented symptoms of intoxication five weeks after the painting, the first being dryness of the throat, irritating cough, and conjunctivitis. One of the patients, a woman aged 58, developed tremor, extreme restlessness, anxiety, insomnia, and profound asthenia. In convalescence her gait was shuffling, but she made a complete recovery in nine weeks. In the other three patients the symptoms of irritation of the mucous membranes disappeared in two or three weeks. The room which had been painted was hot and very damp, and the walls were covered with mould. Chemical examination of the paint showed that its arsenical content was so small as to exclude arsenic as a cause of the symptoms, which Sijtsema suggests were due to the formation of aldehyde from the linseed oil under the action of heat and moisture, and perhaps also of the mould.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 52, 53, 54, 55, 56, 57, 58, 59, and 62 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 60 and 61.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 12.